

SECTION 3.

Affected Environment and Environmental Consequences

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This section describes critical environmental elements that may be affected by the Proposed Action and the environmental consequences. Each critical environmental element provides the impact conclusions of the primary issues such as public safety, water resources, and threatened and endangered species.

The following critical elements of the environment were considered but are not addressed since they are not present or not affected in any way: Areas of Critical Environmental Concern, Prime or Unique Farmlands, Native American Religion Concerns, Wild and Scenic Rivers, and Wilderness.

3.1 General Setting

The proposed project spans portions of three states, nine counties, and two North American deserts. Elevations across the project range from 4,000 feet to approximately 1,000 feet above sea level. Extreme temperature changes are common throughout these desert regions. Average annual temperatures range from 63.2°F in the El Paso region to 72.6°F in the Phoenix region.

3.1.1 Segment 1

The majority of Segment 1 is located within the Fort Bliss Military Reservation east of the Franklin Mountains in northeast El Paso. A breakout facility including less than half a mile of new pipeline is the portion of this segment located outside the Fort Bliss boundary. Segment 1 does not parallel a roadway but bisects two roadways. The proposed ROW is dominated by mesquite desert on sandy soils. The vegetation is common to the Chihuahuan desert region.

3.1.2 Segment 2

Segment 2 is the longest segment, originating south of Las Cruces, New Mexico and ending in eastern Cochise County, Arizona. The majority of this segment is closely associated with I-10 and the UPRR except for portions on the east and west ends. Segment 2 traverses variations of plant communities common to the Chihuahuan desert.

3.1.3 Segment 3

Segment 3 follows closely alongside the UPRR and I-10 between Tucson and Casa Grande, Arizona. The proposed ROW passes north of Picacho Peak State Park. This approximately 30-mile segment contains both Sonoran desert plant communities and agricultural land.

3.1.4 Segment 4

Segment 4 continues to follow the railroad northwest to Maricopa, Arizona, then passing through the GRIC land to Laveen, Arizona. This segment runs through the Gila River Valley between the Sierra Estrella Mountains and the South Mountains just south of Phoenix. The GRIC portion of the segment contains saltbush scrub and 1-mile-long tamarisk crossing of the Gila River.

3.1.5 Ancillary Facilities

As described in Section 2.1.2, ancillary facilities to be constructed or modified include a new breakout facility in El Paso County (Segment 1), four existing pump stations, two existing terminals, new and existing valves as needed, cathodic protection test stations, and pipeline markers. Two scraper stations also would be installed along Segment 2 of the proposed project. The general settings of the ancillary facilities are similar to the descriptions provided above, mainly predisturbed vacant Chihuahuan or Sonoran Desert environment.

3.2 Land Use

The SFPP pipeline crosses both federal and non-federal jurisdictions. Since the route of the four proposed segments are dictated largely by the location of the existing pipeline, most of the lands crossed are within predisturbed railroad, pipeline, and fiber-optics ROWs. When the pipeline crosses small cities along the way, such as Deming, New Mexico, and Eloy, Arizona, there are more commercial, industrial, and residential developments. Grazing areas also are found along the segments; however, none are predicted to be disturbed at the moment. If fences, gates, and/or water tanks disturbances occur on grazing land, the owner will be notified and any disturbance will be mitigated by returning the adjustments to their original condition and location as possible.

Figure 3.2-1 presents the surface land ownership for the four proposed segments, and Table 3.2-1 presents land ownership disturbance by segment.

3.2.1 Affected Environment

3.2.1.1 Segment 1

Segment 1 is 6.2 miles in length and 75 acres in area, including the temporary 100-foot construction easement. All of Segment 1 is located in El Paso County. Land ownership includes Fort Bliss, El Paso Natural Gas, Southern Pacific Pipeline, Bruce Foods Corporation, El Paso County, and the City of El Paso Public Service Board properties.

3.2.1.2 Segment 2

Segment 2 is 161 miles in length and 1,951.52 acres in area, including the temporary 100-foot construction easement. Segment 2 is located in Dona Ana, Luna, Grant, Hidalgo, and Cochise Counties. Land ownership is mainly vacant desert BLM lands and New Mexico state lands. The private lands are mostly used for grazing or were previously used for grazing.

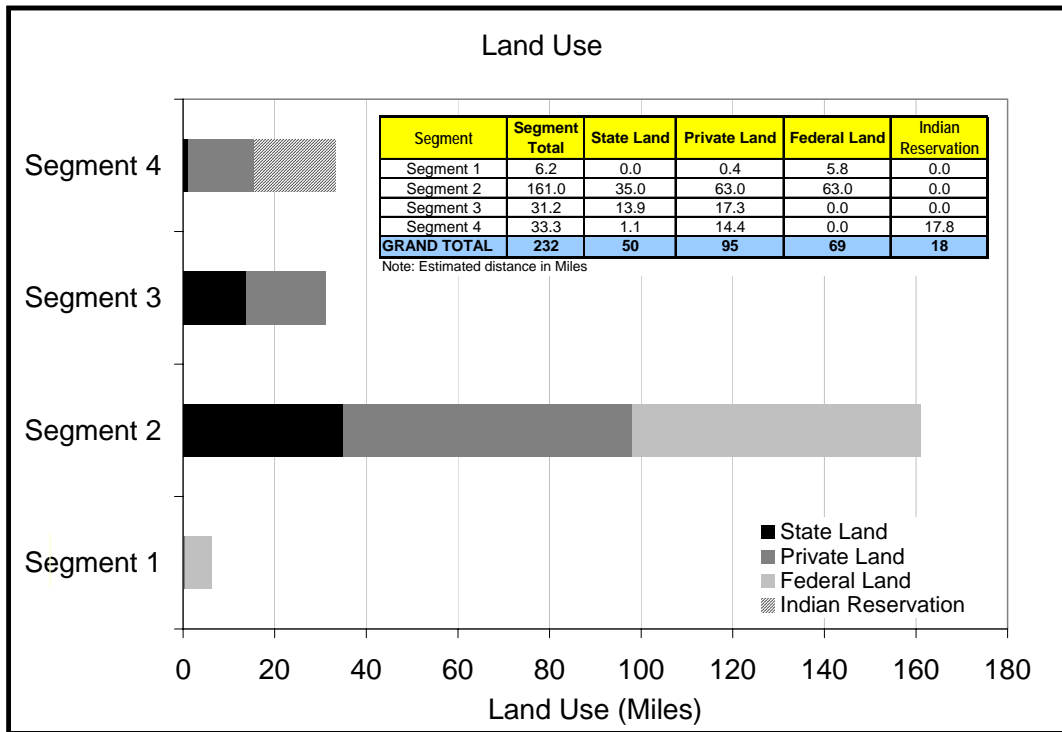


FIGURE 3.2-1

Land Use Ownership by Segment (Federal land in Segment 1 is all Ft. Bliss while Federal land in Segment 2 belongs to BLM)

TABLE 3.2-1

Land Use Disturbance by Segment

		1	2	3	4	Total By Land Use
State Land	Miles	0.0	35.0	13.9	1.1	50.0
	Acres	0.0	424.2	168.5	13.3	606.0
Private Land	Miles	0.4	63.0	17.3	14.4	95.1
	Acres	4.8	763.6	209.7	174.5	1,152.6
Federal Land	Miles	5.8	63.0	0.0	0.0	68.8
	Acres	70.3	763.6	0.0	0.0	833.9
Indian Reservation	Miles	0.0	0.0	0.0	17.8	17.8
	Acres	0.0	0.0	0.0	215.7	215.7
Total By Segment (Miles)		6.2	161.0	31.2	33.3	
Total By Segment (Acres)		75.1	1,951.3	378.1	403.6	

Note: Segment 1- additional 35 acres disturbance for breakout facility. Scraper stations are included within the ROW boundary.

3.2.1.3 Segment 3

Segment 3 is 31.2 miles in length and 378.1 acres in area, including the temporary 100-foot construction easement. Segment 3 is located in Pima and Pinal Counties. Land ownership is mainly vacant desert Arizona state lands and private lands. The private lands are used for grazing or were previously used for grazing and agriculture.

3.2.1.4 Segment 4

Segment 4 is 33.3 miles in length and 403.6 acres in area, including the temporary 100-foot construction easement. Segment 4 is located in Pinal and Maricopa Counties. Land ownership is mainly vacant desert GRIC land, private lands, and some state lands. Segment 4 extends north into the City of Phoenix public ROW. Most private lands are properties obtained for current and future residential land development. Some private lands are used for existing agriculture and grazing.

3.2.1.5 Ancillary Facilities

The breakout facility would be located in El Paso on vacant Public Service Board (PSB) property. Appropriate zoning has been approved through the Land Planning Commission in the City of El Paso. Purchase of the land is from the city through the PSB.

3.2.2 Environmental Consequences

3.2.2.1 Proposed Action

Landowners would be notified in advance of any construction or survey activities that might interfere with their operations and privacy. For the most part, this project is located within an existing utility corridor on both public and private land; therefore, no significant impacts are expected in the long term. Temporary short-term impacts during construction may include inconveniencing private landowners during surveys and construction activities to gain access to their lands. Provisions will be made to accommodate concerns expressed by any of the consulted Native American Indian tribes.

3.2.2.2 No Action Alternative

Under the No Action Alternative, no pipeline expansion would occur and land use regulations along each segment would remain unchanged. Land use would not be affected by implementation of the No Action Alternative. No mitigation would be required.

3.3 Recreational Resources

3.3.1 Affected Environment

Recreational activities include hunting, camping, picnicking, nature studying and observation, wildlife and cultural viewing, hiking, photography, back-country vehicle use, off-roading, and sightseeing, among others.

Impacts on recreational resources would occur if the construction, operation, and/or the existence of the pipeline resulted in the degradation or termination of the recreational activities in any specific area.

3.3.1.1 Segment 1

No specific recreational resources were found in Segment 1. General recreational resources in the area include nature, wildlife, and cultural observation. No hunting is allowed within city limits. Photography and off-roading are not typical in that area of El Paso or on Fort Bliss.

3.3.1.2 Segment 2

No specific recreational resources were found in Segment 2. General recreational resources in the area include nature, wildlife, and cultural observation; hunting; photography; and off-roading.

3.3.1.3 Segment 3

No specific recreational resources were found in Segment 3. General recreational resources in the area include nature, wildlife, and cultural observation; hunting; photography; and off-roading.

3.3.1.4 Segment 4

Other than the GRIC, no specific recreational resources were found in Segment 4. General recreational resources in the area include nature, wildlife, and cultural observation, especially on the GRIC; hunting; photography; and off-roading.

3.3.1.5 Ancillary Facilities

No specific recreational resources were found where ancillary facilities exist or are proposed. Most of these locations are currently occupied with pipeline or other energy source facilities.

3.3.2 Environmental Consequences

3.3.2.1 Proposed Action

No potential impact would occur on recreational resources. Construction activity would present minimal and temporary impacts in terms of temporary delays in traffic.

3.3.2.2 No Action Alternative

Under the No Action Alternative, no pipeline expansion would occur and recreational resources along each segment would remain unchanged. However, the shortage of petroleum products in the Tucson/Phoenix markets may increase fuel prices due to high demand. This might discourage lower income populations from taking recreational trips requiring car travel into recreational areas. No mitigation would be required.

3.4 Geology and Soils

3.4.1 Affected Environment

3.4.1.1 Segment 1

The topography along Segment 1 is relatively flat with occasional gentle slopes. Segment 1 follows an existing pipeline alignment, and the topography does not pose any unusual hazard.

Geologically, Segment 1 traverses unconsolidated alluvial deposits of the Rio Grande system. Alluvial deposits are typically easy to excavate and do not pose a significant hazard to pipeline installations.

Segment 1 is within an area of moderately low seismic activity. Standard earthquake protection measures would be appropriate for Segment 1.

Soil types in this region are thermic semiarid, with mean annual soil temperatures of 15 to 22°C. Most soils are deep, moderately coarse and coarse textured, derived from acidic igneous rocks.

One potential constraint on installation of the pipeline is the presence of caliche in the El Paso area. Caliche is a discontinuous calcareous deposit that varies in thickness and hardness. Some caliche-lithified areas consist only of friable carbonate cement in soil at the depth of a historical water table. Other caliche-lithified areas can be several feet of well-indurated deposits that are harder than concrete. There are no apparent obstacles with respect to topography, geology, seismicity, or soil type in Segment 1.

3.4.1.2 Segment 2

The proposed and alternative routes for Segment 2 pass through the same or similar terrain and geology. The topography along the segment is relatively flat with occasional gentle slopes. Greater topographic relief is encountered near the Pyramid Mountains and through Steins Pass area of the Peloncillo Mountains near the New Mexico/Arizona border. Segment 2 follows an existing pipeline alignment, and the topography does not pose any unusual hazard. Both the Pyramid and Peloncillo Mountains are located in the western half of Segment 2.

Geologically, Segment 2 generally passes through unconsolidated alluvial or playa deposits. Alluvial and playa deposits are typically easy to excavate and do not pose a significant hazard to pipeline installations. Volcanic areas exist near the Pyramid Mountains and Cedar Mountain.

Segment 2 is within an area of low seismic activity. The entire area has a 10 percent chance of experiencing an earthquake with an acceleration of 3 to 6 percent within the next 50 years. Standard earthquake protection measures would be appropriate for Segment 2.

Soil types in this region are thermic semiarid, with mean annual soil temperatures of 15 to 22°C. Most soils are deep, fine grained to moderately coarse, derived from acidic igneous rocks. Exceptions include soils derived from localized basalt flows and from saline-sodic soils located in the playa regions.

One potential constraint on installation of the pipeline is the presence of caliche across southern New Mexico and Arizona. Some caliche-lithified areas consist only of friable carbonate cement in soil at the depth of a historical water table. Other caliche-lithified areas can be several feet of well-indurated deposits that are harder than concrete.

Additional constraints along Segment 2 may include lateral spreading hazards. Possible lateral spreading hazards occur at locations where the alignment extends across or near the margins of a channel, river, or other body of water with the potential for erosion and/or sloughing of saturated sediments along an embankment. Appropriate design approaches can mitigate the lateral spread hazard. There are no apparent obstacles with respect to topography, geology, seismicity, or soil type in Segment 2.

3.4.1.3 Segment 3

Segment 3 traverses relatively flat topography, and very little relief is encountered. Geologically, Segment 3 passes through unconsolidated alluvial deposits that are easily excavated.

Segment 3 appears to be within a low to moderately low seismically active area. The entire area has a 10 percent chance of experiencing an earthquake with an acceleration of 4 to 8 percent within the next 50 years. Standard earthquake protection measures would be appropriate for Segment 3.

Soil types in this region are hyperthermic arid, with mean annual soil temperatures exceeding 22°C. Most soils are deep, moderately fine grained, derived from acidic igneous rocks. The exception comes in the case of soils derived from localized basalt flows. Soils along this corridor have a shrink/swell potential that could affect the pipeline. Soils with this potential generally swell as they become saturated and shrink as they release water. This alternating sequence of shrinking and swelling can result in locally unstable soils.

Similar to Segments 1 and 2, one possible geologic/lithologic constraint in Segment 3 is the presence of caliche.

Lateral spreading and subsidence with resultant earth fissures present possible hazards in Segment 3. Slow, large-scale subsidence due to the overpumping of regional groundwater is occurring in several portions of both Arizona and New Mexico. In a portion of Pinal County between Phoenix and Tucson, an area of more than 100 square miles sank at least 7 feet between 1952 and 1977. This area includes the town of Eloy, Highway 10, Highway 87, and 11 miles of the Southern Pacific Railroad alignment.

There are no apparent obstacles with respect to topography, geology, seismicity, or soil type identified in Segment 3. However, subsidence and soil contraction and expansion may present engineering challenges.

3.4.1.4 Segment 4

Both the proposed and alternative alignments for Segment 4 traverse relatively flat topography, and very little relief is encountered. Geologically, Segment 4 passes through unconsolidated alluvial deposits that are easily excavated.

Although Segment 4 does not cross identified faults, seismicity screening was performed. Segment 4 appears to be within a low to moderately low seismically active area that is relatively stable. All of Segment 4 has a 10 percent chance of experiencing an earthquake with an acceleration of 4 to 8 percent within the next 50 years. Standard earthquake protection measures would be appropriate for Segment 4.

Soil types in this region are hyperthermic arid, with mean annual soil temperatures exceeding 22°C. Most soils are deep, moderately fine grained, derived from acidic igneous rocks. The exception comes in the case of soils derived from localized basalt flows. Soils along this corridor have a shrink/swell potential that could affect the pipeline. Soils with this potential generally swell as they become saturated and shrink as they release water. This alternating sequence of shrinking and swelling can result in locally unstable soils.

As with the previously discussed segments and for the same reasons, lateral spreading and the occurrence of large-scale subsidence present possible hazards in Segment 4.

Similar to Segment 3, there are no apparent obstacles with respect to topography, geology, seismicity, or soil type in Segment 4.

3.4.1.5 Ancillary Facilities

The 35-acre site for the proposed breakout facility on Segment 1 contains topography, geology, and soil types consistent with the remainder of the segment. Pump stations, terminals, valves, scraper stations, cathodic protection test stations, and pipeline markers also have geology and soil types consistent with the segments in which they are located.

3.4.2 Environmental Consequences

3.4.2.1 Proposed Action

Implementation of the Proposed Action would result in short-term impacts to geology and soil as result of construction activities. After pipe installation is complete, the ROW would be recontoured to the original topography with the original soil that was excavated. Caliche or large rock material would be spread across the ROW or disposed of according to appropriate guidelines and landowner approval. No significant long-term impacts are expected. Erosion measures would be in place to help maintain ROW topography. Additionally, the proposed project area would follow alongside existing linear ROWs that have been disturbed in the past and may undergo continual disturbance.

3.4.2.2 No Action Alternative

Under the No Action Alternative, no pipeline expansion would occur and no ground-disturbing activities would take place. Geology and soils within the proposed project area would remain unchanged, and therefore, would not be affected. No mitigation would be required.

3.5 Hydrology and Water Quality

3.5.1 Affected Environment

3.5.1.1 Segment 1

Groundwater in Segment 1 is located in the Hueco Bolson aquifer. The alluvial deposits are composed of gravel, sand, silt, and clay. Groundwater is typically at a depth greater than 100 feet below ground surface (bgs). There do not appear to be any hydrogeologic features that preclude constructing a pipeline along this segment of the alignment.

Potentially high in total dissolved solids (TDS), the water type varies by location from sodium bicarbonate to calcium-sodium sulfate. While waters may be corrosive in some areas, overall water quality, coupled with the probable depth of groundwater, does not pose a problem for the construction and maintenance of the pipeline.

3.5.1.2 Segment 2

Groundwater in Segment 2 begins within the alluvium of the Rio Grande system but moves into the Basin and Range system at the New Mexico-Arizona border. The alluvial deposits are composed of gravel, sand, silt, and clay. Groundwater is typically at a depth greater than 100 feet bgs, but may approach the ground surface in some areas in larger towns and cities and near river crossings. Local dewatering of an excavation may be necessary in these areas. There do not appear to be any hydrogeologic features that preclude constructing a pipeline along this segment of the alignment.

The water quality of the shallow aquifer improves as the segment goes from the Rio Grande system to the Basin and Range system. TDS drops as the Basin and Range alluvium is more regularly flushed with recharge than the Rio Grande alluvium. Water types are commonly calcium-magnesium sulfate-bicarbonate with the exception of the local surficial groundwater systems related to the playa lakebeds (sodium chloride water types). While waters may be corrosive in some areas, overall water quality, coupled with the probable depth of groundwater, does not pose a problem for the construction and maintenance of the pipeline.

3.5.1.3 Segment 3

Groundwater in Segment 3 is located entirely within the Basin and Range system. The alluvial deposits are composed of gravel, sand, silt, and clay. Groundwater is typically at a depth greater than 100 feet bgs, but may be near the ground surface in some areas such as larger wash crossings and near towns such as Eloy. Local dewatering of an excavation may be necessary in these areas. There do not appear to be any hydrogeologic features that preclude constructing a pipeline along this segment of the alignment.

The water quality of the shallow aquifer is generally suitable for most uses. TDS is normally less than 1,000 parts per million (ppm) as the alluvium is regularly flushed with recharge. Water types are commonly calcium-magnesium sulfate-bicarbonate with the exception of the local surficial groundwater systems related to the playa lakebeds (sodium chloride water types). While waters may be corrosive in some areas, overall water quality, coupled with the probable depth of groundwater, does not pose a problem for the construction and maintenance of the pipeline.

3.5.1.4 Segment 4

Groundwater in Segment 4 is located entirely within the Basin and Range system. The alluvial deposits are composed of gravel, sand, silt, and clay. Groundwater is typically at a depth greater than 100 feet bgs, but may approach the ground surface in some areas in larger towns and cities and near river crossings. Local dewatering of an excavation may be necessary in these areas. There do not appear to be any hydrogeologic features that preclude constructing a pipeline along this segment of the alignment.

The water quality of the shallow aquifer is generally suitable for most uses. TDS is normally less than 1,000 ppm as the alluvium is regularly flushed with recharge. Water types are commonly calcium-magnesium sulfate-bicarbonate with the exception of the local surficial groundwater systems related to the playa lakebeds (sodium chloride water types). While waters may be corrosive in some areas, overall water quality, coupled with the probable depth of groundwater, does not pose a problem for the construction and maintenance of the pipeline.

3.5.1.5 Ancillary Facilities

Groundwater at the 35-acre site for the proposed breakout facility on Segment 1 is contained within the Hueco Bolson aquifer. The pump stations, terminals, valves, scraper stations, cathodic protection test stations, and pipeline markers contain groundwater in the system consistent with the segments in which they are located. Groundwater at each of the segments is typically 100 feet bgs with the slight possibility of being near the ground surface in isolated instances.

3.5.2 Environmental Consequences

3.5.2.1 Proposed Action

Implementation of the Proposed Action may result in the short-term impact of local hydrology or water quality in the event that groundwater is encountered during excavation and dewatering is necessary. However, this potential impact would only occur during pipe installation and would be temporary. No long-term impacts to hydrology or water quality are expected. Additionally, the proposed project area would follow alongside existing linear ROWs that have experienced past pipeline installations with no long-term impacts to hydrology or water quality.

3.5.2.2 No Action Alternative

Under the No Action Alternative, no pipeline expansion would occur and no excavation of the ROW would take place. Hydrology and water quality within the proposed project area would remain unchanged, and therefore, would not be affected. No mitigation would be required.

3.6 Floodplains and Wetlands

3.6.1 Affected Environment

3.6.1.1 Segment 1

Segment 1 is comprised entirely of mesquite desert. The landscape is dominated by sand dunes with mesquite (*Prosopis* spp.) hummocks. Salt bush (*Atriplex canescens*), snakeweed (*Gutierrezia sarothrae*), and yuccas (*Yucca* spp.) are scattered throughout the area as well.

3.6.1.2 Segment 2

Mesquite desert is the dominant habitat in Segment 2 and comprises approximately 65.4 miles of this segment. Semi-desert grassland is the second-most dominant habitat type, making up approximately 45.3 miles of Segment 2. Other habitats include creosote scrub (approximately 28.3 miles), yucca grassland (approximately 13.6 miles), desert scrub (approximately 7.8 miles), salt playa (approximately 5.8 miles), agricultural land (approximately 1.6 miles), and bare land (approximately 1 mile). In addition, there is a small riparian crossing approximately 0.1 mile in length.

Segment 2 of the pipeline replacement project begins in the El Paso-Las Cruces Hydrologic Unit approximately 1.4 miles east of the Rio Grande and approximately 0.5 miles east the West Side Canal. Between MPs 38.8 and 42, a total of 14 well-defined open sandy channels are present within the study area. These drainages ranged from approximately 6 feet wide to approximately 50 feet wide. These features were all associated with the gentle topographic rise (average 2 percent slopes) on the western side of the Mesilla Valley. The only other feature observed in this hydrologic unit was a narrow, approximately 3 feet wide, well-defined open sandy drainage channel near MP 59.

Near MP 60, the alignment crosses into the Mimbres Hydrologic Unit. The upper reach of the Mimbres River is perennial but as the river enters Luna County the river becomes intermittent with infrequent flows and the well-defined river channel terminates approximately 10 miles east of Deming. The pipeline replacement would cross the Mimbres River between MPs 101 and 102, approximately 3 miles east of Deming where the open sandy channel is approximately 27 feet wide. In addition to the Mimbres River, 12 other well-defined, open, sandy ephemeral washes were observed within the study area within this basin. These channels ranged from small 2 to 6 feet wide, often braided systems, to larger 10 to 15 feet wide, open sandy channels.

At the Continental Divide (near MP 129), the pipeline alignment enters the Animas Valley Hydrologic Unit. Parts of this basin are characterized by a prominent pattern of shallow, ephemeral tributary channels, extensive playa lakes, and areas where sheet flooding occurs during periods of heavy precipitation. Sixty well-defined drainage features were observed within the study area within this basin. Significant features in this area included the Shakespeare Arroyo, which is a large open sandy channel approximately 30 feet wide near MP 163. Several well-defined drainages including Steins Creek also are present within the study area between MPs 183 and 188. This section of the alignment also crosses South Alklai Flat playa between MPs 172 and 178.

Near MP 190, the alignment enters the San Simon Hydrologic Unit. Fifty-two well-defined drainage channels were observed in the study area within this basin. The alignment would cross the San Simon River near MP 190.5. The river channel in this area is approximately 8 feet wide and supports a narrow band of riparian vegetation. Flows in this reach appear to be perennial as a result of agricultural irrigation runoff. Between MP 193 and the termination of Segment 2, 49 well-defined ephemeral drainages ranging from 4 feet to 50 feet wide were observed within the study area.

3.6.1.3 Segment 3

Segment 3 is primarily comprised of agricultural land; desert, mesquite and creosote scrub occur within the remaining portions of Segment 3. Agricultural land makes up approximately 12.45 miles of Segment 3. Desert scrub comprises approximately 7.4 miles of this segment. Mesquite desert and dense mesquite/wash habitat occur within 5 miles and 2.7 miles of this segment, respectively. Segment 3 also includes approximately 3.3 miles of creosote scrub.

Segment 3 is located in the Lower Santa Cruz Hydrologic Map Unit, which is a sub-basin of the Gila River Watershed. The most prominent feature in this area is the McClellan Wash, which runs parallel to the alignment in or near the environmental study limits between MPs 349 and 352. The wash in this area ranges from 30 to 50 feet wide, with high, steep cut banks. Fifteen other well-defined ephemeral drainages from 3 to 13 feet also are present within the environmental study limits along this segment of the alignment. The pipeline also would cross the Santa Rosa Canal at approximately MP 364.6.

3.6.1.4 Segment 4

Saltbush scrub (approximately 18.16 miles) is the dominant habitat type along Segment 4. Disturbed roadside vegetation, consisting of a mix of grasses, shrubs, and weeds, occur within approximately 14.6 miles along this segment. The Gila River crossing consists of dense tamarisk. This riparian crossing is approximately 1 mile in length. Agricultural land occurs within approximately 0.9 mile of Segment 4.

Segment 4 also is within the Lower Santa Cruz Hydrologic Map Unit. The Gila River is the most prominent feature along this segment of the alignment. The headwaters of the Gila River originate in the Black Mountains in western New Mexico and flows west to the Colorado River. Flows in the river are regulated by several dams, and reservoirs have been constructed along the river. Agricultural withdrawals downstream of the San Carlos Reservoir cause the river to run dry in the reach between Florence and the Colorado River with flows only in response to heavy precipitation events and/or releases from upstream dams. The proposed alignment would cross the Gila River between MPs 411 and 412. In this area the broad river channel is characterized by dense growth of salt cedar. The other prominent feature in this segment is the Santa Cruz Wash. The alignment crosses this feature in three locations. Near MP 391, the alignment crosses a wide section of the wash bounded by levees. Upland vegetation was scattered throughout the channel and no recent evidence of flow was noted in this area. The second crossing occurs near MP 397, where the channel was under construction to create well-defined sloped banks and an open channel to facilitate water conveyance in this area. The third crossing was located on the GRIC land near MP 410. In this area the wash was a large, open, sandy channel approximately 180 feet

wide with several smaller braided tributary channels running roughly parallel to the main drainage channel. Fourteen other well-defined drainages ranging from small 3-foot-wide sandy gravel channels to broad 100-foot-wide arroyos also were observed along this segment.

3.6.1.5 Ancillary Facilities

The general settings of the ancillary facilities are similar to the descriptions provided above, mainly predisturbed vacant Chihuahuan or Sonoran Desert environment. The 35-acre site for the proposed breakout facility on Segment 1 consists of mesquite desert with disturbed roadside vegetation along the perimeter of the property. The pump stations, terminals, valves, scraper stations, cathodic protection test stations, and pipeline markers have habitat types consistent with the segments in which they are located.

3.6.2 Environmental Consequences

3.6.2.1 Proposed Action

Appendix E provides a summary of all of the sample locations and features identified in the environmental study area within the 200-foot study corridor. Locations of the wetland sample points are shown on the attached maps. A brief description of the major features identified within each segment is provided below. Consultation is ongoing with the Army Corps of Engineers and Environmental Protection Agency in obtaining a Nation Wide Permit and would be completed prior to issuance of the Notice to Proceed and ROW grant.

Segment 1. No wetland features or waters of the United States were identified in this segment; therefore, no impacts would occur with implementation of the proposed project.

Segment 2. Under the Proposed Action, all ephemeral drainage channels within the temporary construction ROW in Segment 2 would be disturbed for underground placement of the pipe. However, the San Simon River would be crossed using a HDD method and therefore not disturbed. Excess material from boring would be disposed of offsite. Construction activities would be conducted while there is no flowing water or less than 6 inches of water in the channel. Areas within the ROW would be recontoured to original grade following construction activities. Therefore, the Proposed Action would not affect the function of any of the waterways within Segment 2.

Segment 3. Under the Proposed Action, all ephemeral drainage channels within the temporary construction ROW in Segment 3 would be disturbed for underground placement of the pipe. Construction activities would be conducted while there is no flowing water or less than 6 inches of water in the channel. Areas within the ROW would be recontoured to original grade following construction activities. Excess material from boring would be disposed of offsite. Therefore, the Proposed Action would not affect the function of any of the waterways within Segment 3.

Segment 4. Under the Proposed Action, all ephemeral drainage channels within the temporary construction ROW in Segment 4 would be disturbed for underground placement of the pipe. However, Santa Cruz Wash would be crossed using a HDD method and therefore not disturbed. Excess material from boring would be disposed of offsite. Construction activities would be conducted while there is no flowing water or less than

6 inches of water in the channel. Areas within the ROW would be recontoured to original grade following construction activities. Therefore, the proposed action would not affect the function of any of the waterways within Segment 4.

Ancillary Facilities. No wetland features or waters of the United States were identified at the site proposed for ancillary facilities; therefore, no impacts would occur with implementation of the proposed project.

3.6.2.2 No Action Alternative

Under the No Action Alternative, no pipeline expansion would occur and no ground-disturbing activities would take place. Wetlands or waters of the United States within the proposed project area would remain unchanged, and therefore, would not be affected. No mitigation would be required.

3.7 Biological Resources

Information sources for biological resources included field surveys, reference books, journal articles, websites, government databases, topographic maps, aerial photography, other projects in the vicinity of the proposed pipeline, and personal communications with agency personnel. As it pertains to biological resources, the 'project area' is defined as 100 feet on either side of the proposed centerline or periphery of proposed facilities. This section addresses vegetation, wildlife, and wildlife habitat. Special status species of plant and wildlife are treated separately in Section 3.8.

Reconnaissance surveys performed in April and May 2004 characterized the vegetation and wildlife habitat within the project area. Surveyors employed a combination of vehicular and pedestrian surveys. These surveys delineated the project area into vegetation/habitat types based on changes in either vegetation or wildlife habitat conditions (e.g., substrate, topography). Descriptions were adapted from those of Brown's (1982) biotic communities (vegetation and wildlife habitat) of the Southwest. Conditions were evaluated within 100 feet on either side of the proposed pipeline for its potential to support special status species of plant and wildlife. Survey results are listed in Appendix F of this document. Lists of species protected by the Endangered Species Act (ESA), or candidates for protection, for all counties traversed by the project were reviewed prior to conducting field surveys.

Reconnaissance surveys performed categorized the area into one of eight vegetation/habitat types as described below:

1. Mesquite Desert— A type of semi-desert grassland where mesquite is dominant to monoculture, but segregates spatially and does not form a continuous canopy. In New Mexico, this also may occur in upland sand flats and sand dunes, forming hummocks.
2. Semi-desert Grassland— In New Mexico and Arizona, grasses are dominant to co-dominant with scrub/shrub and succulents. In eastern New Mexico, homogeneous stands of grasses and shrubs mix together or patchy mosaics of grassland and scrubland occur.

3. Creosotebush Scrub— Creosotebush is dominant to monoculture, but segregates spatially and does not form a continuous canopy.
4. Yucca Grassland— A type of semi-desert grassland where grasses and yucca are co-dominant. Shrubs also may be co-dominant. Habitat shifts to scrub when shrubs dominate. Similar transition zone gradation occur between yucca grassland and grassland.
5. Desertscrub—Shrubs and sub-shrubs dominate. Mesquite is frequently dominant and shrubs do not typically form a continuous canopy.
6. Salt Playas— Dominated by salt tolerant grasses and other herbaceous, or unvegetated areas. These areas are within basins with high soil salt/mineral content. Salt playas are seasonally or occasionally flooded or saturated.
7. Agricultural Land— Areas used for growing commercial crops. Agricultural vegetation present.
8. Disturbed Roadside Vegetation— Areas along roadsides or railroads that are dominated by noxious weeds with few native grasses or shrubs.

3.7.1 Vegetation

3.7.1.1 Affected Environment

The proposed project area is situated within the Basin and Range Physiographic Province characterized by broad, low-elevation valleys (basins) surrounded by mountain ranges. The proposed alignments would remain primarily within these valleys avoiding mountainous terrain.

The proposed project route passes through both the Chihuahuan and Sonoran Deserts. The Chihuahuan Desert covers parts of western Texas, southern New Mexico, and southeastern Arizona and, therefore, encompasses Segments 1 and 2. It also extends south in the Mexico, covering much of the state of Chihuahua. The Chihuahuan Desert is a cold, high desert with frequent hard frosts and a single rainy season in the summer. Typical floral growth forms are low shrubs and succulents and small cacti. Chihuahuan floristic composition is dominated by species of colder climate origins. With rare exceptions in riparian areas, continuous canopy closure is nonexistent, and groundcover is intermittent, with significant areas of exposed ground.

The Sonoran Desert covers parts of southwestern Arizona and southeastern California, as well as most of Baja California and the western half of the state of Sonora, Mexico. It encompasses all of Segments 3 and 4. Unlike the Chihuahuan Desert, large cacti and small trees are predominant in many areas of the Sonoran Desert. This is a comparatively warm desert with the vegetation being of tropical and subtropical origin. The Sonoran Desert's bi-seasonal rainfall creates relatively lush vegetation in comparison with most other deserts.

The proposed project areas traverse varied vegetation/habitat types within these two deserts. These vegetation/habitat types include mesquite desert, semi-desert grassland, creosotebush scrub, yucca grassland, desertscrub, dense mesquite/wash, saltbush scrub, salt playas, agricultural land, and disturbed roadside vegetation. Much of the project area is

located immediately adjacent to the existing SFPP East Line ROWs, other linear utilities, I-10, and the UPRR. As a result, portions of the project area are disturbed and support relatively low densities of native vegetation, or areas where native vegetation has been recently restored, or are adjacent to such areas.

Segment 1. Segment 1 is entirely within the mesquite desert vegetation/habitat type (Table 3.7-1). The landscape is dominated by sand dunes with shrubby mesquite covering stabilized hummocks. Saltbush (*Atriplex* spp.), snakeweed (*Gutierrezia sarothrae*), and yuccas (*Yucca* spp.) are scattered throughout the area as well.

TABLE 3.7-1
Vegetation/Habitat Types–Segment 1

Vegetation/Habitat Type	Miles
Mesquite Desert	6.2

Segment 2. Segment 2 traverses a mosaic of Chihuahuan desertscrub and semi-desert grassland as mapped by Brown and Lowe (1980). Chihuahuan desertscrub habitats are dominated by shrub species such as creosotebush (*Larrea tridentata*). Grasses are not particularly abundant in the desertscrub habitats, but the diversity of plants, including shrubs, cacti, and forbs, are often relatively high. The semi-desert grassland areas are often dominated by grasses such as tobosa (*Hilaria mutica*), sideoats (*Bouteloua* spp.), tanglehead (*Heteropogon contortus*) as well as several other grass species. However, other common plants of semi-desert grassland include yuccas (*Yucca* spp.) as well as shrubby mesquite (*Prosopis* spp.), which are generally considered an invader of historically overgrazed grassland. The xero-riparian scrub associations occur in ephemeral drainages supporting trees and large shrubs. Larger mesquite is the most common tree species in these drainages.

Table 3.7-2 lists the habitat types along with approximate amounts within Segment 2.

TABLE 3.7-2
Vegetation/Habitat Types–Segment 2

Vegetation/Habitat Type	Miles
Mesquite Desert	65.4
Semi-Desert Grassland	45.3
Creosotebush Scrub	28.3
Yucca Grassland	13.6
Desertscrub	7.8
Salt Playa	5.8
Agricultural	1.6
Riparian	0.2
Bare Ground	1.0

TABLE 3.7-2
Vegetation/Habitat Types–Segment 2

Vegetation/Habitat Type	Miles
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Segment 3. Segment 3 is wholly within the Sonoran Desert traversing areas mapped by Brown and Lowe (1980) as Lower Colorado River and Arizona Upland subdivisions of Sonoran desertscrub biome. The project area supports vegetation/habitat types characteristic of both biomes (Brown and Lowe, 1994). Common plant species within the Lower Colorado River subdivision include creosotebush (*Larrea tridentata*), desert broom (*Baccharis sarothroides*), brittlebrush (*Encelia farinosa*), saltbush (*Atriplex* spp.), and white bursage (*Ambrosia dumosa*). Some creosotebush, mesquite, and other desert forbs and grasses also are present in various densities throughout most of the project area.

The typical Arizona Upland vegetation is generally lacking, or poorly developed, in the project area. Foothills palo verde (*Cercidium microphyllum*), ironwood (*Olneya tesota*), and a few saguaro cacti (*Carnegiea gigantea*) are present in upland areas, but in low numbers. A few large other cacti present in this area include barrel cactus (*Ferocactus* spp.) and pincushion cactus (*Mammillaria* spp.), prickly pear (*Opuntia* spp.), chollas (*Opuntia* spp.), and hedgehogs (*Echinocereus* spp.) scattered throughout the understory.

Large washes support velvet mesquite (*Prosopis velutina*), blue palo verdes (*Cercidium floridum*), catclaw acacias (*Acacia greggii*), desert hackberry (*Celtis spinosa*), and ironwoods. Adjacent to I-10 and the fence line of railroad ROW are large trees (primarily blue palo verde and mesquite), which benefit from increased runoff from the highway. Washes that dissect desertscrub support a greater diversity of plants in terms of both species and structural composition.

Large patches of bare ground supporting no perennial vegetation are interspersed with vegetated areas through the project area.

Agricultural lands also are present within the project area. Active agricultural areas for row crops and cattle grazing are adjacent to the roadway. The project area includes active agricultural croplands.

Table 3.7-3 lists the habitat types along with approximate amounts within Segment 3.

TABLE 3.7-3
Vegetation/Habitat types–Segment 3

Vegetation/Habitat Type	Miles
Mesquite Desert	5
Creosotebush Scrub	3.3
Sonoran Desertscrub	7.4
Agricultural	12.5
Dense Mesquite/Wash	2.7

TABLE 3.7-3
Vegetation/Habitat types–Segment 3

Vegetation/Habitat Type	Miles
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Segment 4. Segment 4 is completely within the Lower Colorado subdivision of Sonoran desertscrub (Brown and Lowe, 1980). Undeveloped areas support a saltbush scrub accounting for approximately 18.2 miles of this segment. In these areas saltbush is the most common, and frequently, the only plant cover for much of the proposed alignment. The saltbush tends to segregate spatially and does not form a continuous canopy. Much of the area is bare ground as a result of high soil salinity and surface disturbance. The saltbush scrub intergrades creosotebush scrub toward the north end of the project area as the proposed alignment enters developed areas in the Town of Levine. Disturbed roadside vegetation, consisting of a mix of grass, shrubs, and weeds, make up 45 percent of this segment.

Several large ephemeral drainages cross the project area. These typically support large, but widely scattered, mesquite trees. At the Gila River crossing is a 1-mile wide swath of relatively thick and tall salt cedar.

Table 3.7-4 lists the habitat types along with approximate amounts within Segment 4.

TABLE 3.7-4
Habitat Types–Segment 4

Vegetation/Habitat Type	Miles
Agricultural	.9
Riparian (Tamarisk)	1
Saltbush scrub	18.2
Disturbed roadside vegetation	14.6

Ancillary Facilities. The 35-acre site for the proposed breakout facility on Segment 1 consists of mesquite desert with disturbed roadside vegetation along the perimeter of the property. The pump stations, terminals, valves, scraper stations, cathodic protection test stations, and pipeline markers have habitat types consistent with the segments in which they are located.

3.7.1.2 Environmental Consequences

Proposed Action. Under the Proposed Action, all vegetation within the construction ROW would be disturbed for underground placement of the pipe. Segment 1 would be 6.2 miles in length, which totals approximately 75 acres of disturbance. An additional 35 acres would be disturbed on Segment 1 for the construction of a breakout facility. This disturbance would be permanent since the facility would be a permanent structure on the site. Segment 2 would be 161 miles in length, which totals approximately 1,952 acres of disturbance. Segment 3 would be 31.2 miles in length, which totals approximately 378 acres

of disturbance. Segment 4 would be 34.8 miles in length, which totals approximately 422 acres of disturbance.

However, after construction activities have been completed, the ROW would be recontoured to its original grade and vegetation allowed to grow to its natural state. Where reseeding is required, the ROW would be seeded with a certified weed-free native seed mixture not to exceed 15 pounds per acre. Natural revegetation would not occur at the locations of any ancillary facilities such as the new breakout facility, scraper stations, or pump stations and terminals since these would be permanent structures. The scraper stations would be located entirely within the ROW.

No Action Alternative. Under the No Action alternative, no ground-disturbing activities would occur for the proposed project areas. The No Action Alternative would have no immediate affect on vegetation. No mitigation would be required. However, continued aging of the existing pipeline could lead to increased maintenance activities. Such activities could be in emergency situations, which could lead to unforeseen impacts to vegetation. The No Action Alternative does not meet the objectives of the project's purpose and need.

3.7.2 Wildlife and Wildlife Habitats

3.7.2.1 Affected Environment

With regards to wildlife and wildlife habitat, the project area was categorized in the field as to vegetation/habitat types based on changes in either vegetation or other wildlife habitat features (e.g., substrate, topography). These types are described and quantified in the preceding section on vegetation (Section 3.7.1). Important regional wildlife habitat types that are not part of the project area include mountain and other upland areas with some minor exceptions (e.g., Peloncillo Mountain Pass). Likewise, high value riparian habitat is not present in the project area with the exception of the 0.2 mile of broadleaf (cottonwood) habitat crossed in the San Simon valley in the Arizona portion of Segment 2. Important riparian habitats in the region associated with the Rio Grande, San Pedro, Santa Cruz, and Salt Rivers are not crossed by the proposed project. The proposed project crosses numerous desert washes that can be important wildlife movement corridors. However, in many cases these washes value to wildlife movement is disrupted by the presence of I-10 and the UPRR.

Many wildlife species are common to both the Chihuahuan and Sonoran Desert communities. Reptile species characteristic of both deserts include whiptail lizards (*Cnemidophorus* spp.), zebra-tailed lizard (*Callisaurus draconoides*), tree lizard (*Urosaurus ornatus*), side-blotched lizard (*Uta stansburiana*), gopher snake (*Pituophis melanoleucus*), and western diamondback rattlesnake (*Crotalus atrox*). Bird species include cactus wren (*Campylorhynchus brunneicapillus*), greater roadrunner (*Geococcyx californianus*), curve-billed thrasher (*Toxostoma curvirostre*), and red-tailed hawk (*Buteo jamaicensis*). Characteristic and common mammals include the white-throated woodrat (*Neotoma albigula*), Merriam's kangaroo rat (*Dipodomys merriami*), black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus auduboni*), and coyote (*Canis latrans*).

The Migratory Bird Treaty Act of 1918 (MBTA), as amended (16 United States Code [USC] 703-712) is an international agreement between the United States, Canada, and Mexico that protects designated species of birds. Virtually all birds are protected under the MBTA, with four exceptions (California quail, English sparrows, common pigeons, and European

starlings). A complete list of all species of all migratory birds protected by the MBTA can be found at 50 CFR 10.13. The MBTA controls the taking of these birds, their nests, eggs, parts, or products.

Segment 1. The wildlife habitats present within Segment 1 are characteristic of mesquite desert landscape of the Chihuahuan Desert region. Coyotes, jackrabbits, and desert cottontails are most certainly common mammals in the area. Bird species such as the red-tailed hawk, western kingbird, and scaled quail (*Callipepla squamata*) are common to the area as well. Collared lizards and whiptails are common reptile species found in the area.

Segment 2. Vegetation/habitat types within Segment 2 are primarily a mosaic of semi-desert grasslands and Chihuahuan desertscrub. The length of this segment and the many vegetation/habitat types traversed resulted in a wide variety of wildlife species being observed during field surveys. The western whiptail lizard (*Cnemidophorus tigris*), zebra-tailed lizard, side-blotched lizard (*Uta stansburiana*), paint desert glossy snake (*Arizona elegans philipi*), and gopher snake are reptiles species observed in this segment.

Birds typically associated with semi-desert grasslands and Chihuahuan desertscrub observed during field surveys included Swainson's hawk (*Buteo swainsoni*), American kestrel (*Falco sparverius*), scaled quail (*Callipepla squamata*), western burrowing owl (*Athene cunicularia*), Say's phoebe (*Sayornis saya*), Chihuahuan raven (*Corvus cryptoleucus*), loggerhead shrike (*Lanius ludovicianus*), and western meadowlark (*Sturnella neglecta*).

Mammals typically associated with semi-desert grassland and Chihuahuan desertscrub and observed in the project area included desert cottontail, black-tailed jack rabbit, round-tailed ground squirrel (*Spermophilus tereticaudus*), coyote, mule deer (*Odocoileus hemionus*), and pronghorn antelope (*Antilocapra Americana*).

Segment 3. Wildlife observed in the Segment 3 are characteristic of the Sonoran Desert but must be adapted to continual highway traffic noise, and ongoing maintenance activities associated with adjacent linear facilities. Washes that dissect desertscrub support a greater diversity of plants in terms of both species and structural composition and, therefore, a greater variety of wildlife.

Reptiles observed in the project area include the western whiptail (*Cnemidophorus tigris*). Common birds included the Harris' hawk (*Parabuteo unicinctus*), white-winged dove (*Zenaida macroura*), Gila woodpecker (*Melanerpes uropygialis*), Bendire's thrasher (*Toxostoma bendirei*), and northern cardinal (*Cardinalis cardinalis*). Common mammal species observed in the project area included the round-tailed ground squirrel (*Spermophilus tereticaudus*), desert woodrat (*Neotoma lepida*), and coyote.

Segment 4. The project area within Segment 4 is predominately within saltbush scrub and disturbed roadside vegetation/habitat types. In general, these types do not provide good wildlife habitat. Common reptile species observed during field surveys in the project area included the western whiptail and western diamondback rattlesnake. Bird species observed are common throughout the Southwest region and include the white-winged dove, mourning dove, red-tailed hawk, and western kingbird. The black-tailed jackrabbit, desert cottontail, and coyote are common resident mammals observed in the project area. Wild horses (*Equus caballus*) are common within the GRIC.

Ancillary Facilities. The 35-acre site for the proposed breakout facility on Segment 1 contains similar Chihuahuan Desert wildlife habitat as the remainder of the segment. However, the proposed facility site is partially disturbed and bordered by highways on each side. The pump stations, terminals, valves, scraper stations, cathodic protection test stations, and pipeline markers have wildlife habitats consistent with the segments in which they are located.

3.7.2.2 Environmental Consequences

Proposed Action. During construction, it is likely that wildlife would be affected by habitat alteration (e.g., disturbance to vegetation) and temporary displacement (e.g., construction noise). However, much of the project area parallels existing linear facilities including access roads, I-10 and frontage roads, UPRR, fiber optic cables, and other pipelines. Thus, wildlife in the project area is currently exposed to noise and other human disturbances. The addition of the Proposed Action in these portions of the project area would represent a minor increase in exposure to noise and other potentially disturbing activities resulting from construction, operation, and maintenance activities.

There would be short-term and long-term losses of wildlife habitat resulting from the Proposed Action due to ROW clearance and new access roads and access road improvements. Some clearance would include areas of relatively undisturbed wildlife habitat. However, the affected vegetation/habitat types (e.g., semi-desert grassland, creosotebush scrub) are widespread throughout the Chihuahuan and Sonoran Desert regions as are the wildlife they support. There are desert washes crossed by the proposed project that may be utilized as wildlife corridors. Impacts from construction activities within the washes would be of short duration. Long-term impacts to wildlife utilizing these corridors are expected to be minimal.

During construction, a 5- to 6-foot-deep and 2- to 3-foot-wide ditch is typically excavated. An open ditch can be hazardous to wildlife in that they can become trapped in the open ditch. It is recommended that the open ditch be checked regularly to remove any trapped wildlife.

Impacts to migratory birds would be avoided by not disturbing active nests during the breeding season. On the Fort Bliss Military Reservation, it is likely that grading/clearing activity would take place during the breeding season, February 15 through September. This would likely disturb an estimated two migratory bird nests. The disturbance of two nests is not considered to be a significant number and would not have a significant effect on the nesting success of any particular migratory bird species. No active bird nests have been located in the areas of proposed constructions along any of the four segments. Golden eagles, protected under the MBTA and Bald Eagle Protection Act, would not be affected by the Proposed Action. Although an individual was observed flying during reconnaissance surveys of Segment 2 (Appendix F), no nesting habitat occurs within or adjacent to the ROW.

Proposed staging areas, laydown areas, pump stations, and expansion of existing terminals are typically clear of vegetation and are situated in developed and previously disturbed areas.

No Action Alternative. Under the No Action Alternative, no ground-disturbing activities would occur for the proposed project areas. The No Action Alternative would have no immediate affect on wildlife. No mitigation would be required. However, continued aging

of the existing pipeline could lead to increased maintenance activities. Such activities could be in emergency situations, which could lead to unforeseen impacts to wildlife.

3.8 Special Status Species

Special status species are species listed by the U.S. Fish and Wildlife Service (USFWS) as threatened, endangered, proposed for listing as threatened or endangered, or are candidates for protection under the ESA. Also included here are sensitive species on lists maintained by the BLM, New Mexico Department of Game and Fish (NMDGF), and the Arizona Game and Fish Department (AGFD).

Definitions for species on USFWS lists are:

- Endangered (E) = Any species that is in danger of extinction throughout all or a significant portion of its range.
- Threatened (T) = Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
- Proposed (PT, PE) = Any species that has been proposed for listing as a threatened or endangered species.
- Candidate (C) = Any species for which there is sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened but for which preparation and publication of a proposal is precluded by higher-priority listing actions.

The BLM maintains a list of species considered “sensitive” (BLM-S). The definition for sensitive is “...those taxa occurring on BLM Field Office Lands in New Mexico/ Arizona which are considered sensitive by the New Mexico/ Arizona State Office.”

The NMDGF maintains a list of Wildlife of Concern that includes species categorized as endangered, threatened, or sensitive. The NMDGF maintains a database of information on these species within the state as well as those protected by the federal ESA. The AGFD maintains a list of Wildlife of Special Concern in Arizona (WSCA). These are defined as species whose occurrence in Arizona is or may be in jeopardy, or known or perceived threats or population declines, as described by the AGFD’s listing of WSCA (AGFD, in prep.). These are currently the same as those in the Threatened Native Wildlife in Arizona (AGFD, 1988).

Each species was evaluated in terms of the likelihood of it occurring in the project area and then the potential for the species, or its habitat, to be impacted by the proposed project.

3.8.1 Affected Environment

The following is a description of the special status species that may potentially be affected by implementation of the Proposed Action. Table 3.8-1 lists these species and their status. No Designated Critical Habitat for any special status species exists on or near the proposed project areas. However, a portion of the proposed project area is within Proposed Critical Habitat for the cactus ferruginous pigmy owl.

Forty-four additional special status species are known to occur or may potentially occur within the Texas, New Mexico, and Arizona counties through which the proposed project passes. Observation of the proposed ROW and the surrounding area indicated that no suitable habitats exist for these species on or near the project area. Therefore, these species would not be impacted as a result of the proposed project and have been eliminated from further consideration. These 44 species are identified in Appendix G of this document.

Cactus ferruginous pygmy-owl. The cactus ferruginous pygmy-owl (CFPO) (*Glaucidium brasilianum cactorum*) was listed as endangered by the USFWS on March 3, 1997 (62 FR 10730) and also is on the list of WSCA (AGFD, in prep.). The species ranges from lowland south-central Arizona and extreme southeastern Texas and south through Mexico. It is common in Mexico.

TABLE 3.8-1
Special Status Species Potentially Affected by the Proposed Action

Common Name	Scientific Name	Status
Cactus ferruginous pigmy-owl	<i>Glaucidium brasilianum cactorum</i>	ESA-Endangered
Northern aplomado falcon	<i>Falco femoralis septentrionalis</i>	ESA-Endangered
Western burrowing owl	<i>Athene cunicularia</i>	BLM Sensitive
Jaguar	<i>Panthera onca</i>	ESA-Endangered
Lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuenae</i>	ESA-Endangered
Cave myotis	<i>Myotis velifer</i>	BLM Sensitive
Fringed myotis	<i>Myotis thysanodes</i>	BLM Sensitive
Mexican long-nosed bat	<i>Leptonycteris nivalis</i>	ESA-Endangered
Mexican long-tongued bat	<i>Choeronycteris mexicana</i>	BLM Sensitive, AZ-WC
Western small-footed myotis	<i>Myotis cillolabrum</i>	BLM Sensitive
California leaf-nosed bat	<i>Macrotis californicus</i>	BLM Sensitive, AZ-WC
Desert tortoise-Sonoran population	<i>Gopherus agassizi</i>	BLM Sensitive, AZ-WC
Texas horned lizard	<i>Phrynosoma cornutum</i>	BLM Sensitive
Acuna cactus	<i>Echinomastus erectocentrus acunensis</i>	ESA-Candidate
Sand prickly-pear cactus	<i>Opuntia arenaria</i>	New Mexico - Threatened

TABLE 3.8-1
Special Status Species Potentially Affected by the Proposed Action

Common Name	Scientific Name	Status
Notes:		
ESA-Endangered —A species that is considered to be in danger of extinction throughout all or a significant portion of its range and is listed under the ESA.		
ESA-Candidate —Any species for which there is sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened under the ESA but for which preparation and publication of a proposal by the USFWS is precluded by higher-priority listing actions.		
BLM Sensitive —Species occurring on BLM land that are considered sensitive by the state offices.		
New Mexico - Threatened —A species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range in New Mexico as determined by the NMDGF.		
AZ-WC = Wildlife of Special Concern in Arizona —Species whose occurrence in Arizona is or may be in jeopardy, or with known or perceived threats or population declines, as described by the AGFD's listing of Wildlife of Special Concern in Arizona October 1996 Draft.		

The CFPO is a small reddish brown or grayish bird that is found in Sonoran desertscrub habitats characterized by braided wash systems and dense vegetation including ironwood, mesquite, and palo verde; and semi-desert grasslands containing drainages with mesquite, hackberry, and ash. Suitable nesting habitat for the CFPO is defined as areas below 4,000 feet in elevation containing saguaro cacti or other columnar cacti that are at least 8-feet tall, or ironwood, mesquites, palo verde, or other large trees with a trunk diameter of at least 6 inches in diameter at breast height (dbh as measured at 4.5 feet above the ground) (AGFD and USFWS, 2000). Recent observations of CFPOs have been primarily within the Arizona Upland Subdivision of the Sonoran desertscrub. These small owls nest in cavities in such forms of vegetation during late winter and early spring. Juveniles typically disperse from natal areas between July and August and do not appear to defend a territory until September. Direction of dispersal appears to be random and the owl is capable of dispersal up to 22 miles.

Northern aplomado falcon. The northern aplomado falcon (*Falco femoralis septentrionalis*) was listed as endangered on February 25, 1986 (51 FR 6686). Aplomado falcons are long-tailed neotropical falcons intermediate in size between the American kestrel and the prairie falcon. It is typically a species of open habitats in North and Central America, ranging from coastal prairie and other grasslands through tropical savanna to open woodlands containing oaks (*Quercus* spp.) and pines (*Pinus* spp.). The species also has been reported in desert grasslands. Suitable habitat for the northern aplomado falcon occurs within the semi-desert grasslands within the Chihuahuan Desert. Historically, aplomado falcons were reported from Dona Ana, Eddy, Grant, Hidalgo, Lea, Luna, Otero, and Sierra Counties within New Mexico (U.S. Fish and Wildlife Service, 1999). Potentially suitable habitat exists along portions of Segment 2 just east and west of Deming, New Mexico, in areas of relatively dense, tall yuccas that represent potential perching and nesting sites.

Aplomado falcons do not build their own nests, but use the nests of corvids such as ravens and other raptors, including Swainson's hawks and crested caracaras. Falcons will roost in the boughs of yuccas, mesquites, and similar vegetation when they are unable to locate

suitable preexisting nest structures. Nesting occurs from March to June in northern Chihuahua, Mexico. The falcon's diet consists primarily of insects and small birds with insects accounting for more than 60 percent of the falcon's prey, but birds account for more than 90 percent of prey biomass. They also have been known to feed on bats, small rodents, lizards, and snakes.

Western burrowing owl. The western burrowing owl (*Athene cunicularia*), a BLM-Sensitive species, occupies open areas, such as grasslands, desert scrub, and the edges of agricultural fields. They also inhabit golf courses, airports, cemeteries, vacant lots, and road embankments or wherever there is sufficient friable soil for a nesting burrow, which is a critical habitat requirement for burrowing owls. Owls use these burrows for nesting and also require access to alternate burrows providing escape cover for adults and fledglings. Burrowing owls are dependent on fossorial mammals such as badgers, ground squirrels, and prairie dogs to create burrows. In southern Arizona and New Mexico, most owls are year-round residents.

Suitable habitat for the burrowing owl occurs in portions of the project area adjacent to agricultural fields and open grasslands. Because burrowing owls are year-round residents to the area, there is a potential for impact. The burrowing owl is protected under the MBTA, which states that it is unlawful to take, kill, or possess migratory birds (16 USC 703-711). Potential for impacts on migratory birds is primarily a concern during the breeding season, which occurs during the spring and summer for burrowing owls and other species as well.

Jaguar. The jaguar (*Panthera onca*) was federally listed as endangered throughout its historic U.S. range, including New Mexico and Arizona, on July 22, 1997 (62 FR 39147). The range of the species extends south through Central and South America. Jaguars occupy a wide range of habitats including tropical rain forests and deserts. In the northern edge of the species' range (including Arizona and New Mexico), its habitat is described as including arid mountain scrub and oak/pine woodlands. As with other large predators, suitable habitat is likely to be related to the prey base rather than the vegetation type. The closest known population is 135 miles south of the international border in Sonora, Mexico. Individuals wandering north into New Mexico and Arizona are part of that population (Rinkevich and Bashum, 2003). Illegal shooting is the greatest threat to the jaguar in the United States.

Lesser long-nosed bat. The lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*) was listed as endangered by the USFWS on September 30, 1988 (53 FR 38456) without designated critical habitat. It also is considered a WSCA by the AGFD (in prep.). The lesser long-nosed bat is a medium-sized bat with a distinctively elongated nose with a leaf-shaped tip. Their known range extends from extreme southwestern New Mexico and southeastern Arizona north to the Phoenix area, west to the Aqua Dulce Mountains, and south through western Mexico (USFWS, 1995).

Lesser long-nosed bats are summer residents within semi-desert grasslands and Sonoran desert scrub, Arizona Upland Subdivision up to the edge of oak woodland (Hoffmeister, 1986; USFWS, 1995). They begin migration into Arizona in early April. When they arrive, the females are pregnant and congregate in maternity colonies while males occupy separate roosts. The young are born between early May and late June (Hoffmeister, 1986). They migrate south in the fall, leaving Arizona and New Mexico by early October (Hayward and Cockrum, 1971). Lesser long-nosed bats are nectar and pollen feeders, foraging at night in

areas of saguaro and agave. While feeding, they either land on the plant or hover like a hummingbird (Hoffmeister, 1986). Lesser long-nosed bats fly long distances (up to 75 miles) between roosting and feeding areas (USFWS, 1995). During the day they roost in mine tunnels and natural caves (Hayward and Cockrum, 1971). Threats to the lesser long-nosed bat have been identified as the destruction or disturbance of roosting sites and possible loss of agave populations.

Most known roost sites for lesser long-nosed bats are inactive mines. Because the proposed project area does not support dense stands of mature saguaro and this species has been reported to travel long distances to forage, lesser long-nosed bats could forage in the project area. However, there are no concentrations of agaves to assess lesser long-nosed bat foraging habitat in westernmost portion of Segment 2.

Cave myotis. The cave myotis (*Myotis velifer*), a BLM-Sensitive species, occurs in desert scrub areas of the region in conjunction with water sources. This species is dependent on mine shafts and tunnels for roosting. This species is a colonial cave dwelling bat. They also may roost in rock crevices, old buildings, carports, under bridges, and even in abandoned cliff swallow nests. The cave myotis forms nursery colonies, usually numbering in the thousands in caves, mines, barns, buildings, and sometimes under bridges. It is found throughout the southwest from central Oklahoma and Texas westward through the southern half of New Mexico and Arizona. Cave myotis are aerial insectivores and feed on a wide variety of insects including moths, weevils, antlions, small beetles, and flying ants. Because these bats congregate in large groups, they are very susceptible to human disturbance.

Fringed myotis. The fringed myotis (*Myotis thysanodes*), a BLM-Sensitive species, is known from low deserts and grassland areas to ponderosa pine and spruce-fir forests. This species ranges through western North America from Canada to southern Mexico. Fringed myotis roost in caves, mines, and buildings. Suitable habitat for roosting is present in mountain area adjacent to the project area where abandoned mines are present.

Mexican long-nosed bat. The Mexican long-nosed bat (*Leptonycteris nivalis*) is a BLM-Sensitive species as well as a WSCA by the AGFD (in prep.). This species roosts in small groups, usually in canyons, caves, and mine tunnels, but also in relatively exposed locations. They are found in Arizona from the Chiricahuas to the Santa Catalinas and Baboquivaris, and into southwestern New Mexico. Their preferred habitat is Sacaton grasslands, sycamore, cottonwood, rabbitbrush, oak savanna, and coniferous forest. This species winters in Mexico and is a resident of Arizona and New Mexico scrub habitat during the spring and summer months when the plant communities are flowering and nectar is abundant (AGFD, 1993).

Mexican long-tongued bat. The Mexican long-tongued bat (*Choeronycteris mexicana*) is a BLM-Sensitive species. Its range extends from the southern part of the southwestern United States to Honduras and Guatemala. In the United States, it is known mainly from desert habitats between 2,000 and 8,000 feet. The diet consists of nectar and pollen of night-blooming succulents. This species is known to use natural caves, buildings, and old mine tunnels for day roosts. Colonies usually contain several dozen bats, although solitary individuals and groups of 2 to 12 have been recorded.

Western small-footed myotis. The western small-footed myotis (*Myotis cillolabrum*), a BLM-Sensitive species, ranges over most of western North America. They are known from oak, chaparral, and riparian areas within the region. This species habitat requirements are poorly known; however, they are known to use natural caves, buildings, old mine tunnels, and tree bark for roost sites.

California leaf-nosed bat. The California leaf-nosed bat (*Macrotus californicus*) is a BLM-Sensitive species as well as a WSCA (AGFD, in prep.). These occur throughout the Mojave and Sonoran Deserts and occasionally in the Chihuahuan Desert. It is a year-round resident in desertscrub habitats (mostly Sonoran desertscrub) of southern and western Arizona south of the Mogollon Rim (Hoffmeister, 1986). They are locally common, roosting colonially in mines, caves, and under bridges (AGFD, 1988; Cockrum, 1980). California leaf-nosed bats remain active throughout the year in Sonoran desertscrub habitats due to the relatively mild climate and continuous availability of food. They feed primarily on large, night-flying beetles, grasshoppers, and moths that are taken in flight. They also feed on insect larvae, especially of butterflies, which are taken from the bushes or on the ground. There is some evidence that they also feed on fruits, including cacti. Their home range and local seasonal movements are largely unknown (Hoffmeister, 1986). Its numbers are thought to be low, apparently due to limited winter roosts and vandalism at roost sites (AGFD, 1988).

Desert tortoise. The desert tortoise (*Gopherus agassizii*), Sonoran Population, is a BLM-Sensitive special as well as a WSCA (AGFD, in prep.). Sonoran desert tortoises in Arizona range from the Kingman area south to the Chocolate Mountains (Arizona), and southeast to the San Pedro River area (Johnson et al., 1990; Palmer and Ladehoff, 1991). Sonoran desert tortoise habitat consists primarily of hills and rocky mountainous terrain of Arizona Upland Subdivision of the Sonoran desertscrub. While tortoises construct burrows throughout their range (Germano et al., 1994), they also use other kinds of shelter sites. Desert tortoises typically forage on plants, plant litter, and arthropods. The Sonoran Desert tortoise home range is estimated to be about 50 acres in size (Barrett, 1990).

Texas horned lizard. Texas horned lizards are flat-bodied lizards with numerous horns on the head and a brownish color. It is the only species of horned lizard to have dark brown stripes that radiate downward from the eyes and across the top of the head. Texas horned lizards hibernate from September–October until April–May, at which time they begin mating. These lizards are ant specialists, feeding on large amounts of harvester ants.

Acuna cactus. The Acuna cactus (*Echinomastus erectocentrus acunensis*) is a candidate for listing as threatened and endangered under the ESA. The historic range of this cactus includes Pinal, Pima, and possibly Maricopa Counties in Arizona, and in Sonora, Mexico. There are currently four populations in Arizona. The Organ Pipe National Monument has the largest known population. This is a small cactus less than 12 inches in height with a single stem and straight central spines. Acuna cactus is generally restricted to well-drained knolls and gravel ridges between major washes in the Sonoran desertscrub habitat between 1,300 and 2,000 feet elevation.

Sand prickly-pear cactus. Sand prickly pear (*Opuntia arenaria*) is a New Mexico threatened species known from a few localities in sandy soils including dunes, floodplains, and arroyos in extreme southeastern New Mexico. The range of this cactus includes southern Dona Ana,

Luna, and Socorro Counties of New Mexico as well as adjacent El Paso County, Texas and Chihuahua, Mexico. This species has a distinctive appearance with much thicker and narrower stem joints compared to typical prickly pear. It more closely resembles a cholla. It is low growing with stems consisting of loosely attached flattened joints up to 8 centimeter (cm) in length by 2 to 3 cm in width. The cactus produces yellow flowers from May to June. Sand prickly pear can be found in sandy areas, particularly semi-stabilized sand dunes among open Chihuahuan desert scrub. It is often found with honey mesquite and a sparse cover of grasses at an elevation of 3,800 to 4,300 feet.

3.8.1.1 Segment 1

No potentially suitable habitat exists for special status species within Segment 1.

3.8.1.2 Segment 2

Northern aplomado falcon. Potentially suitable habitat exists along portions of Segment 2 just east and west of Deming, New Mexico. Northern aplomado falcons have not been recorded in Arizona since before 1940. No individuals or nests were identified during field surveys of the project area. The approximately 14 miles identified as yucca grassland represents potential habitat in this segment.

Western burrowing owl. Burrowing owls are present along portions of Segment 2 and were observed near the proposed ROW during field surveys. They could potentially occupy any portion of this segment but is most likely to occur within open areas of semi-desert grassland (45 miles of Segment 2) or bare ground (1 mile of Segment 2). No active burrows were located in the areas of proposed construction during environmental surveys of the proposed ROW.

Jaguar. The project area is located in flats adjacent to potential jaguar habitat. If a jaguar were to travel as far north as the project area, it would likely be through the mountain habitats of the Peloncillo Mountains (MP 180 to MP 183).

Lesser long-nosed bat. This species may forage in the project area; however, there are no potential roost or maternity sites in the project area. The absence of dense stands of agave greatly reduces the potential for this species to forage in the area.

Cave myotis. This species may forage in the project area; however, there are no potential roost sites or maternity sites in the project area.

Fringed myotis. This species may forage in the project area; however, there are no potential roost or maternity sites in the project area.

Mexican long-nosed bat. This species may forage in the project area; however, there are no potential roost or maternity sites in the project area. The absence of dense stands of agave reduces the potential for this species to forage in the area.

Mexican long-tongued bat. This species may forage in the project area; however, there are no potential roost or maternity sites in the project area. Potential feeding habitat was observed in New Mexico and Arizona. However, abundant potential feeding habitat in proximity to potential roost habitat (mines, rock crevices, potential cave-like habitats) is limited to the Peloncillo Mountain Pass through which the pipeline passes (MP 180 to MP 183).

Western small-footed myotis. This species may forage in the project area; however, there are no potential roost sites or maternity sites in the project area.

Desert tortoise. Segment 2 is located within the range of the desert tortoise (Sonoran Population) and this species was identified by the AGFD as occurring within 3 miles of the proposed project area (Schwartz, 2004). Potentially suitable hillside habitat exists in the vicinity of Segment 2 near MP 206. No individuals or tortoise sign was observed during field surveys.

Texas horned lizard. Potentially suitable habitat exists along all portions of Segment 2 in the open areas with sparse plant cover. No individuals were observed during field surveys.

Sand prickly-pear cactus. Potentially suitable habitat exists for the sand prickly-pear cactus within the Segment 2 project area; however, this species is not known to occur in the vicinity of the project area and was not observed during field surveys.

3.8.1.3 Segment 3

Cactus ferruginous pygmy-owl. Limited portions of Segment 3 are located within potential breeding (MP 350 to MP 353) and dispersal habitat (MP 335.89 to MP 350) although no individuals are known to inhabit the area.

Western burrowing owl. Potentially suitable habitat is present within the project area. This species could occur in any of the areas of open, sparsely vegetated areas interspersed throughout this segment. Open agricultural fields interspersed adjacent to the ROW also provide suitable habitat. No owls or burrows were observed during field surveys.

Lesser long-nosed bat. This species may potentially forage in the project area; however, there are no potential roost or maternity sites in the project area. The AGFD identified this species as occurring within 3 miles of the project area (Schwartz, 2004), most likely within the Picacho Mountains adjacent to Segment 3 (between MP 350 and MP 355). The absence of dense stands of saguaro and agaves in the project area reduces the likelihood of the species foraging in the area.

Cave myotis. This species may forage in the project area; however, there are no potential roost sites or maternity sites in the project area. The AGFD identified this species as occurring within 3 miles of the project area (Schwartz, 2004), most likely within the Picacho Mountains adjacent to Segment 3 (between MP 350 and MP 355).

California leaf-nosed bat. This species may potentially forage in the project area; however, there are no potential roost or maternity sites in the project area. The AGFD identified this species as occurring within 3 miles of the project area (Schwartz, 2004), most likely within the Picacho Mountains adjacent to Segment 3 (between MP 350 and MP 355).

Desert tortoise. Potentially suitable habitat is present in the vicinity of the project area. No individuals or tortoise sign was observed during field surveys. Segment 3 is located within the range of the desert tortoise (Sonoran Population) and this species was identified by the AGFD as occurring within 3 miles of the proposed project area (Schwartz, 2004). The Picacho Mountains, adjacent to Segment 3 (between MP 350 and MP 355), are known to be occupied by tortoises.

Acuna cactus. Potentially suitable habitat exists along portions of Segment 3 that contain well-drained knolls and gravel ridges (MP 350 to MP 355). No individuals were observed during field surveys.

3.8.1.4 Segment 4

Western burrowing owl. Potentially suitable habitat is present throughout the project area. This species could occur within all habitat types with the exception of the dense riparian habitat associated with the Gila River. It would most likely occur within the open agricultural fields adjacent to the ROW. However, no owls or burrows were observed in this segment during field surveys.

Acuna cactus. Potentially suitable habitat is present within the project area. No individuals were observed during field surveys.

3.8.1.5 Ancillary Facilities

The 35-acre site for the proposed breakout facility on Segment 1 contains similar Chihuahuan Desert wildlife habitat as the remainder of the segment. No potentially suitable habitat exists for special status species within the proposed site. The pump stations, terminals, valves, scraper stations, cathodic protection test stations, and pipeline markers have wildlife habitats consistent with the segments in which they are located and therefore have similar potential habitats for special status species. No individual special status species were observed at any of the proposed ancillary facility sites during field surveys.

3.8.2 Environmental Consequences

3.8.2.1 Proposed Action

The following summarizes the effects of the Proposed Action alternative on special status species potentially occurring within the project area.

Segment 1. The Proposed Action would have no impact on special status species or their potential habitats within Segment 1. No special status species or their potential habitats have been identified within Segment 1.

Segment 2. The Proposed Action would have the following environmental consequences in Segment 2:

Northern aplomado falcon— The Proposed Action would have no direct effects on individual aplomado falcons. The Proposed Action may have an indirect effect on potential breeding and foraging behavior in the area during the period in which construction activities take place. This potential impact would be minimal considering the amount of foraging area and suitable vegetation surrounding the proposed project area and the BMP of avoiding, to the extent possible, large yuccas that may provide potential nest habitat (see W3 of Table 2.3-1). Yuccas to be avoided would be flagged prior to construction. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area. The 100-foot temporary construction easement boundary would be staked and flagged within the line of sight by the contractor.

Western burrowing owl. The Proposed Action would have no direct effects on individual burrowing owls. No active burrows were located in the areas of proposed construction during environmental surveys of the proposed ROW. The Proposed Action may have an indirect effect on nearby burrowing owls during construction activities. Any potential impact would be minimal, lasting only during the construction activities within the ROW. A clearance survey for burrowing owls of proposed project areas would be conducted within 30 days prior to initiation of construction activities. If burrowing owls are found, the owls would be evicted prior to the start of construction. If eviction of owls during the breeding season is necessary, the project proponent would coordinate with the USFWS and AGFD/NMDGF to evict the owls in a manner that minimizes potential harm to adults and nestlings.

Jaguar. The Proposed Action would have no direct effects on individual jaguars. The Proposed Action may have an indirect effect on foraging behavior of jaguars by displacing prey species during construction. The potential for jaguars roaming as far north as the project site is extremely low.

Lesser long-nosed bat—The Proposed Action would have no direct effects on individual lesser long-nosed bats. Saguaros, which are major foraging plants, would not be removed, and would remain physically available to the bats. The Proposed Action may have an indirect effect on foraging behavior of individuals potentially foraging in the area during the period in which construction activities take place. This potential impact would be minimal considering the amount of foraging area and suitable vegetation surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area.

Cave myotis. The Proposed Action would have no direct effects on individual cave myotis. The Proposed Action may have an indirect effect on foraging behavior of individuals potentially foraging in the area during the period in which construction activities take place. This potential impact would be minimal considering the amount of foraging area and suitable vegetation surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area.

Fringed myotis. The Proposed Action would have no direct effects on individual fringed myotis. The Proposed Action may have an indirect effect on foraging behavior of individuals potentially foraging in the area during the period in which construction activities take place. This potential impact would be minimal considering the amount of foraging area and suitable vegetation surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area.

Mexican long-nosed bat. The Proposed Action would have no direct effects on individual Mexican long-nosed bats. The Proposed Action may have an indirect effect on foraging behavior of individuals potentially foraging in the area during the period in which construction activities take place. This potential impact would be minimal considering the amount of foraging area and suitable vegetation surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area.

Mexican long-tongued bat. The Proposed Action would have no direct effects on individual Mexican long-tongued bats. Saguaros, which are major foraging plants, would not be removed, and would remain physically available to the bats. The Proposed Action may have an indirect effect on foraging behavior of individuals potentially foraging in the area during the period in which construction activities take place. This potential impact would be minimal considering the amount of foraging area and suitable vegetation surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area.

Western small-footed myotis. The Proposed Action would have no direct effects on individual western small-footed myotis. The Proposed Action may have an indirect effect on foraging behavior of individuals potentially foraging in the area during the period in which construction activities take place. This potential impact would be minimal considering the amount of foraging area and suitable vegetation surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area.

Desert tortoise. The Proposed Action would have no direct effects on individual desert tortoises. However, if a tortoise is encountered in the project area, work in the area would cease until the tortoise could be moved out of harms way by a qualified handler. The Proposed Action may have an indirect effect on foraging behavior of individuals potentially foraging or roaming in the area during the period in which construction activities take place. This potential impact would be minimal considering the amount of foraging area and suitable vegetation surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area.

Texas horned lizard. The Proposed Action would have no direct effects on individual Texas horned lizards. The Proposed Action may have an indirect effect on individuals by impacting potential habitat within the ROW. This potential impact would be minimal considering the amount of potential habitat surrounding the proposed project area.

Sand prickly-pear cactus. The Proposed Action would have no direct effects on individual sand prickly-pear cacti. The Proposed Action may have a direct effect on potential habitat for this species within the ROW. This potential impact would be minimal considering the amount of potential habitat surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area.

Segment 3. The Proposed Action would have the following environmental consequences in Segment 3:

Cactus ferruginous pygmy-owl. The Proposed Action would have no direct effect on individual CFPOs but may have a direct effect on potentially suitable breeding and dispersal habitat in the form of construction activities. However, this effect would be minimal and take place for the short amount of time it takes to install the new pipeline in this segment. To minimize any potential effects, large mesquites and saguaros within potential breeding or dispersal habitat would be avoided to the extent practicable (see W2 of Table 2.3-1). Plants to be avoided would be flagged prior to construction. Upon installation

of the new pipeline segment, the ROW would be restored to its original contour. Disturbances due to I-10 and UPRR would continue to occur along the segment of the proposed project. Indirectly, construction activities may potentially affect the dispersal activities of individuals. This potential effect also would be minimal considering the proposed project would follow alongside existing linear ROWs that produce continual disturbance to the area.

Western burrowing owl. The Proposed Action would have no direct effects on individual burrowing owls. No active burrows were located in the areas of proposed construction during environmental surveys of the proposed ROW. The Proposed Action may have an indirect effect on nearby burrowing owls during construction activities. Any potential impact would be minimal, lasting only during the construction activities within the ROW. A clearance survey for burrowing owls of proposed project areas would be conducted within 30 days prior to initiation of construction activities. If burrowing owls are found, the owls would be evicted prior to the start of construction. If eviction of owls during the breeding season is necessary, the project proponent would coordinate with the USFWS and AGFD to evict the owls in a manner that minimizes potential harm to adults and nestlings.

Lesser long-nosed bat. The Proposed Action would have no direct effects on individual lesser long-nosed bats. Saguaros, which are major foraging plants, would not be removed, and would remain physically available to the bats. The Proposed Action may have an indirect effect on foraging behavior of individuals potentially foraging in the area during the period in which construction activities take place. This potential impact would be minimal considering the amount of foraging area and suitable vegetation surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area.

Cave myotis. The Proposed Action would have no direct effects on individual cave myotis. The Proposed Action may have an indirect effect on foraging behavior of individuals potentially foraging in the area during the period in which construction activities take place. This potential impact would be minimal considering the amount of foraging area and suitable vegetation surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area. The species insect prey base would be unaffected.

California leaf-nosed bat. The Proposed Action would have no direct effects on individual California leaf-nosed bats. The Proposed Action may have an indirect effect on foraging behavior of individuals potentially foraging in the area during the period in which construction activities take place. This potential impact would be minimal considering the amount of foraging area and suitable vegetation surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area. The species insect prey base would be unaffected.

Desert tortoise. The Proposed Action would have no direct effects on individual desert tortoises. However, if a tortoise is encountered in the project area, work in the area would cease until the tortoise could be moved out of harms way by a qualified handler. The Proposed Action may have an indirect effect on foraging behavior of individuals potentially foraging or roaming in the area during the period in which construction activities take

place. This potential impact would be minimal considering the amount of foraging area and suitable vegetation surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area.

Acuna cactus. The Proposed Action would have no direct effects on individual acuna cacti. The Proposed Action may have a direct effect on potential habitat for this species within the ROW. This potential impact would be minimal considering the amount of potential habitat surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area.

Segment 4. The Proposed Action would have the following environmental consequences in Segment 4:

Western burrowing owl. The Proposed Action would have no direct effects on individual burrowing owls. No active burrows were located in the areas of proposed construction during environmental surveys of the proposed ROW. The Proposed Action may have an indirect effect on nearby burrowing owls during construction activities. Any potential impact would be minimal, lasting only during the construction activities within the ROW. A clearance survey for burrowing owls of proposed project areas would be conducted within 30 days prior to initiation of construction activities. If burrowing owls are found, the owls would be evicted prior to the start of construction. If eviction of owls during the breeding season is necessary, the project proponent would coordinate with the USFWS and AGFD to evict the owls in a manner that minimizes potential harm to adults and nestlings.

Acuna cactus. The Proposed Action would have no direct effects on individual acuna cacti. The Proposed Action may have a direct effect on potential habitat for this species within the ROW. This potential impact would be minimal considering the amount of potential habitat surrounding the proposed project area. Additionally, the proposed project area would follow alongside existing linear ROWs that produce continual disturbance to the area.

No Action Alternative. Under the No Action Alternative, no ground disturbing activities would occur and habitat within the proposed project areas would remain in their current state. The No Action Alternative would have no immediate affect on special status species. No mitigation would be required. However, continued aging of the existing pipeline could lead to increased maintenance activities. Such activities could be in emergency situations, which could lead to unforeseen impacts to special status species.

3.9 Air Quality

The U.S. Environmental Protection Agency (USEPA) sets air quality standards as a mechanism for attaining air quality levels that protect public health and the environment. These standards are based on scientific determinations of thresholds below which no adverse effects on human health or the environment may occur. The current National Ambient Air Quality Standards (NAAQS) have been established for six criteria pollutants: carbon monoxide, nitrogen dioxide, lead, ozone, sulfur dioxide, and two sizes of particulate matter (PM). States are required to adopt ambient air quality standards that are at least as stringent as the federal NAAQS; however, state standards may be more stringent. Areas of

the country where air pollution levels consistently exceed the NAAQS may be designated “nonattainment.” The following section provides the nonattainment area specifications for Segments 1 through 4.

3.9.1 Affected Environment

3.9.1.1 Segment 1

Segment 1 is located entirely in El Paso County in the State of Texas. El Paso County is designated as nonattainment for ozone and PM₁₀. Portions of the county also are designated nonattainment for carbon monoxide. El Paso County is designated attainment for all other pollutants by USEPA and the State of Texas. Segment 1 would be located in the nonattainment area for PM₁₀ and ozone. After June 15, 2005, when 1-hour ozone standard is replaced by an 8-hour standard, El Paso would be redesignated attainment for the 8-hour ozone standard.

3.9.1.2 Segment 2

Segment 2 is located in Dona Ana, Luna, Grant, and Hidalgo counties in New Mexico and Cochise County in Arizona.

Portions of Dona Ana County are designated nonattainment for PM₁₀ and ozone. Luna County is designated attainment for all criteria pollutants. A portion of Grant County is designated nonattainment for sulfur dioxide in the vicinity of Phelps Dodge Chino Copper Smelter. The Grant County nonattainment area is a portion of an 8-mile radius region around the smelter. Hidalgo County is designated attainment for all criteria pollutants.

Portions of Cochise County in Arizona are designated nonattainment for PM₁₀ and sulfur dioxide. The primary source for the sulfur dioxide was the Phelps Dodge, Inc. copper smelter, which was dismantled in 1995. In December 2001, the Arizona Department of Environmental Quality (ADEQ) submitted to USEPA the *Douglas Sulfur Dioxide Nonattainment Area State Implementation and Maintenance Plan and Request for Redesignation to Attainment*. The area in which the proposed pipeline would be located is designated as attainment for all criteria pollutants.

3.9.1.3 Segment 3

Segment 3 passes through Pima and Pinal Counties, Arizona; however, most of the segment is located in Pinal County.

Portions of Pima County are designated nonattainment for PM₁₀ and sulfur dioxide. Portions of Pinal County are designated nonattainment for PM₁₀, sulfur dioxide, and ozone. Portions of Segment 3 would be located in nonattainment area for PM₁₀ in Pima County. Segment 3 in Pinal County is located in attainment areas for all pollutants.

3.9.1.4 Segment 4

Segment 4 is located in both Pinal and Maricopa counties. As mentioned above, Pinal County is nonattainment for PM₁₀, sulfur dioxide, and ozone, while Maricopa County is nonattainment for carbon monoxide, PM₁₀, and ozone. Segment 4 in Pinal County is located in an attainment area for all pollutants. Segment 4 also passes through GRIC. GRIC is attainment or unclassifiable for all criteria pollutants.

3.9.1.5 Ancillary Facilities

The breakout terminal and pump station (El Paso Breakout Station) in El Paso County would be located in the City of El Paso near the intersection of Railroad Drive and Ashley Road. The key elements of the proposed project include installation of

- Two 80,000-barrel multi-product (gasoline, diesel, or jet) storage tanks
- Six 50,000-barrel multi-product (gasoline, diesel, or jet) storage tanks
- One 30,000-barrel transmix storage tank
- Scraper pig launching and receiving facility
- Electrically driven shipping pumps
- Vapor bladder tank and thermal oxidizer

SFPP is applying to the Texas Commission on Environmental Quality (TCEQ) for an air quality permit as required by the Texas Administrative Code Chapter 116 (30 TAC Chapter 116). The El Paso Breakout Station would be developed on approximately 35 acres of currently undeveloped property. There is no school within 3,000 feet of the property and no developed housing within 50 feet of the property. The nearest school to the proposed site is Desertaire Elementary School at 6301 Tyger Eye Drive, approximately 10,500 feet from the property. The nearest housing to the proposed site is on Roadrunner Street, located approximately 5,870 feet to the southwest of the proposed site.

3.9.2 Environmental Consequences

3.9.2.1 Proposed Action

The proposed project is located in a Class II airshed. Under the Clean Air Act (CAA), Class II areas have increment ceilings on additional pollution over baseline concentrations, which allow for moderate development. Class II airsheds represent areas of the country protected under the CAA, however, with less stringent protection from air pollution damage than Class I or other exceptions. Class I airsheds are identified by the CAA as areas that were in existence as of August 7, 1977, that meet the following criteria: national parks over 6,000 acres, national wilderness areas and national memorial parks over 5,000 acres, and international parks.

Air quality for the entire project area would be degraded only during short-term construction activities and during limited operation of backup generators at ancillary facilities. During groundbreaking activities for pipe installation, an increase in vehicular traffic and fugitive dust would be expected. An increase in emissions from construction equipment and vehicles transporting employees and materials to the work site also would occur during the construction phase. However, emission levels of volatile organic compounds (VOCs), nitrogen oxides, sulfur dioxide, carbon monoxide, and other emissions from internal combustion engines and PM₁₀ from vehicular travel on unpaved surfaces would not be expected to exceed any predetermined standards for air quality (BLM, 2001).

In the maintenance phase, little impact on air quality from fugitive dust is anticipated due to the close proximity of the ROW to existing highways, requiring minimal travel on unpaved surfaces. The pump stations would not affect air quality under normal conditions. In the event of regular power interruptions, backup generators (255 horsepower [hp]) powered by natural gas or diesel fuel would provide emergency electrical power. It is estimated that

each generator would not be required for more than 100 hours per year. During times of operation, these generators would emit some amounts of the six criteria pollutants; however, emissions would not exceed annual air quality general conformity thresholds (BLM, 2001). No mitigation measures for generator use are recommended as no adverse effects would result from their temporary use.

The following mitigation measures would be in place during project construction and/or operation of the pipeline system:

- Construction sites would be sprayed with water, when needed, to reduce suspension of dust particles.
- All portable engines and portable engine-driven equipment would be inspected and maintained pursuant to state or local regulations.

Impacts to air quality for each segment would be negligible and short term. Impacts would primarily take the form of fugitive dust during construction activities. The Proposed Action would not cause the local air quality to exceed the NAAQS.

No Action Alternative. Under the No Action Alternative, the current supply of petroleum products would have to satisfy the increasing demands of the Phoenix/Tucson region. The area would continue to receive a large portion of their petroleum products via tanker trucks. Potential environmental impacts associated with hauling petroleum products by tanker trucks would remain. This would include potential impacts to air quality due to high truck traffic associated with tanker trucks hauling to Phoenix and Tucson.

3.10 Historic and Cultural Resources

Cultural resources are locations of past activity, occupation or use, and include archaeological, historic, or architectural sites. A cultural resource is defined as 50 years old or older. Numerous laws and regulations oversee the protection of such cultural resources, including the Antiquities Act of 1906 (PL 59-206), the National Historic Preservation Act of 1966 (as amended, PL 89-665), the National Environmental Policy Act of 1969 (PL 91-852), the Archaeological Resources Protection Act of 1979 (PL 96-95), and the Executive Order 11593.

A Class I archaeological site records search was conducted to gather information on previously recorded sites within a ¼-mile radius of the project area in Texas and New Mexico and 1-mile radius in Arizona. Subsequently, a Class III intensive field inventory was conducted within a 200-foot-wide corridor for the pipeline and access roads. Laydown yards and break down areas also were surveyed. Archaeologists walked non-overlapping transects spaced at no more than 15-meter intervals. Any cultural remains determined to be 50 years or older were recorded. If an area contained a concentration of artifacts or features, the area was recorded as a site according to BLM, Fort Bliss, and the States of Texas, New Mexico, and Arizona's definitions for sites located within their respective jurisdictions. If these definitions did not apply to the located cultural remains, they were recorded as isolated occurrences. During recording of a site, archaeologists analyzed artifacts in the field to determine the age of the site and its cultural affiliation. In

addition, National Register of Historic Places (NRHP) eligibility also was assessed for each site.

The goals of the survey were (1) to identify all cultural resources within the area potential effect, (2) to evaluate such resources in terms of eligibility for the National and State Registers of Historic Places (collectively referred to as the Register), and (3) to assess the effects of the proposed undertaking on such resources. Historic context, historic significance, and historic integrity are the three interrelated concepts on which eligibility is based. ("Historic", in this sense, applies to both prehistoric and historic-period cultural resources.) The significance of a cultural resource (historic property) depends upon its association with an important historic context and upon retaining the integrity of those features necessary to convey its significance.

- Historic contexts are defined as "those patterns, themes, or trends in history by which a specific occurrence or property is understood and its meaning (and ultimately its significance) within history is made clear" (National Register Staff, 1998:7). For archaeological sites, the historic context is "the analytical framework within which a property's importance can be understood" (Townsend et al., 1993:25).
- Historic significance is defined as "the importance of a property to the history, architecture, archaeology, engineering, or culture of a community, state, or the nation" (McClelland, 1997:3). The criteria used to determine significance recognize different types of values embodied in the various types of cultural resources: districts, sites, buildings, structures, and objects. These values fall into one or more categories (National Register Staff, 1998:11):
 - Associative value (Criteria A and B): Cultural resources significant for their association or linkage to events (Criterion A) or persons (Criterion B) important in the past.
 - Design or Construction value (Criterion C): Cultural resources significant as representatives of the manmade expression of culture or technology.
 - Information value (Criterion D): Cultural resources significant for their ability to yield important information about prehistory or history.
- Historic integrity is defined in general as "the authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's historic period (McClelland, 1997:4). For archaeological sites significant under Criterion D, the site's importance resides in its potential to answer questions relevant to its historic context. This, in turn, means that its historic integrity is defined by the presence of sufficiently intact archaeological features and deposits (Townsend et al., 1993).

The project archaeologists made NRHP eligibility recommendations to the BLM; the BLM then consulted with the appropriate agencies to determine site eligibility.

3.10.1 Affected Environment

Since the current project crosses a vast extent of the southern Southwest, the project area includes evidence of many cultures. Archaeologists have devised various frameworks to

address culture history in the region. Evidence of human occupation in the region where the pipeline segments cross are evident since the Paleoindian period of 10,000 B.C. There are similarities across the region in the Paleoindian and Archaic period, but later prehistory exhibits greater variability. It is therefore necessary to discuss the Archaic and later periods in a more detailed way for the sub-regions of this project. A complete Chronologic Cultural History can be found at the end of this document in Appendix H.

3.10.2 Segment 1

Segment 1 cultural resources surveys conducted in and within ¼ mile of project area are listed in Table 3.10-1. Table 3.10-2 lists the previously located sites within the same area.

TABLE 3.10-1
Segment 1 Cultural Resources Surveys Conducted In and Within ¼ Mile of Project Area

Year	No. of Acres/Miles	Client/Sponsor	Undertaking	Performing Agency/Consultant	Reference
Segment 1					
1964	Unknown	Unknown	Survey	U.T. Austin	U.T. Austin 1964
1967	Unknown	Unknown	Salvage Project	EPAS	Brook, 1967
1976	Unknown	Ft. Bliss	Maneuver Areas 1 and 2	UTEP	Whalen, 1976
1977	Unknown	Ft. Bliss	Maneuver Areas 1 and 2	UTEP	Whalen, 1977
1978	Unknown	Ft. Bliss	Maneuver Areas 1 and 2	UTEP	Whalen, 1978
1980	Unknown	Ft. Bliss	Maneuver Areas 1 and 2	UTEP	Whalen, 1980
1986	Unknown	TXDOT	Loop 375	UTEP	O'Laughlin et al., 1986
1987	Unknown	TXDOT	Loop 375	UTEP	O'Laughlin et al., 1987
1988	Unknown	TXDOT	Loop 375	UTEP	O'Laughlin et al., 1988
1989	Unknown	TXDOT	Loop 375	UTEP	O'Laughlin et al., 1989
1990	Unknown	TXDOT	Loop 375	UTEP	O'Laughlin et al., 1990
1991	Unknown	TXDOT	Loop 375	UTEP	O'Laughlin et al., 1991
1996	Unknown	Ft. Bliss	Maneuver Areas 1 and 2		Lukowski and Stuart 1996

Notes:
EPAS = El Paso Archaeological Society
U.T. Austin = University of Texas, Austin
UTEP = University of Texas, El Paso
TXDOT = Texas Department of Transportation

TABLE 3.10-2
Segment 1 Previously Recorded Sites in and Within ¼ Mile of Project Area

Site No.	Site Type/Constituents	Cultural/Temporal Affiliation(s)	Reference
Segment 1			
41EP8 (FB 10366)	Habitation	Mogollon	U.T. Austin, 1964
41EP12 (FB 10537)	Habitation	Mogollon	Brook, 1967
41EP319	Artifact scatter	Mogollon	Unknown
41EP898	Small camp	Unknown	Whalen, 1977
41EP902 (FB 7884)	Artifact scatter with feature	Unknown	Unknown
41EP993	Not in TARL database	Not in TARL database	Unknown
41EP994	Small camp	Unknown	Whalen, 1977
41EP995	Not in TARL database	Not in TARL database	Unknown
41EP1591	Small camp	Unknown	Whalen, 1977
41EP1634	Small camp	Unknown	Whalen, 1977
41EP1635	Small camp	Unknown	Whalen, 1977
41EP1672 (FB 6832)	Artifact scatter with features	Mogollon	Unknown
41EP1689	Habitation	Mogollon	Unknown
41EP1713	Habitation	Mogollon	Unknown
41EP1714	Not in TARL database	Not in TARL database	Unknown
41EP1716	Artifact scatter	Mogollon	EPAS, 1985
41EP1717	Small camp	Unknown	Whalen, 1977
41EP1870	Not in TARL database	Not in TARL database	Unknown
41EP1887	Habitation	Mogollon	Unknown
41EP1897	Not in TARL database	Not in TARL database	O'Laughlin et al., 1988
41EP1898	Habitation	Mogollon	O'Laughlin et al., 1988
41EP1900	Not in TARL database	Not in TARL database	Unknown
41EP1902	Habitation	Mogollon	Unknown
41EP2502	Not in TARL database	Not in TARL database	Unknown
41EP2704	Artifact scatter with hearth	Unknown	O'Laughlin et al., 1988
41EP2705	Artifact scatter	Mogollon	O'Laughlin et al., 1988
41EP2706	Artifact scatter with hearth	Archaic/Mogollon	O'Laughlin et al., 1991
41EP2707	Artifact scatter with hearth	Mogollon	O'Laughlin et al., 1988
41EP2708	Artifact scatter with hearth	Unknown	O'Laughlin et al., 1988

TABLE 3.10-2 (CONTINUED)
Segment 1 Previously Recorded Sites in and Within ¼ Mile of Project Area

Site No.	Site Type/Constituents	Cultural/Temporal Affiliation(s)	Reference
41EP2812	Artifact scatter with hearth	Archaic/Mogollon	O'Laughlin et al., 1988
41EP2838 (FB 10038)	Artifact scatter with features	Mogollon	O'Laughlin et al., 1989
41EP4999	Artifact scatter	Unknown	Lukowski and Stuart 1996
41EP5006	Artifact scatter	Unknown	Lukowski and Stuart 1996
FB 11423	Artifact scatter with hearth	Unknown	Unknown
FB 11428	Artifact scatter with hearth	Unknown	O'Laughlin et al., 1990
FB 12147	Lithic scatter	Unknown	O'Laughlin et al., 1990
FB 12155	Artifact scatter	Unknown	O'Laughlin et al., 1990
FB 12332	Artifact scatter	Unknown	Unknown
FB 12334	Artifact scatter	Unknown	Unknown
FB 12347	Artifact scatter with hearth	Unknown	Unknown
FB 12353	Artifact scatter	Archaic/Mogollon	Unknown

Archeological sites located within the project corridor for Segment 1 are listed in the following table for both previously recorded and currently recorded sites that may be impacted by the proposed action. Seven sites occur in Texas, four of which are recommended as NRHP eligible. Treatment recommendations are indicated in Table 3.10-3 for each site. Data recovery would be limited to the areas of potential effect. A monitor will be provided for all ground disturbing activities near and within the boundaries of sites determined eligible for the NRHP and for other areas determined to have a high potential for buried cultural deposits.

TABLE 3.10-3

Segment 1 Archaeological Sites in Texas: NRHP Eligibility and Treatment Recommendations

Site No.	Cultural/ Temporal Affiliation	Site Type	Eligibility	Approx. Size	Reason for Eligibility	Avoidance Option	Treatment
41EP? (FB 12353)	Archaic/ Jornada Mogollon	Artifact scatter	Eligible	6775 m ²	Subsurface cultural remains	Narrow south side to avoid	Trench site west boundary (site is just inside the ROW)
41EP12 (FB 10537)	Jornada Mogollon	Habitation	Not eligible				No longer exists
41EP902 (FB 7884)	Unknown	Artifact scatter with feature	Not eligible	Now only six flakes, and one ground stone			None
41EP1672 (FB 6832)	Jornada Mogollon	Artifact scatter with features	Eligible	17,777 m ²	Subsurface stains	No	Data recovery- three of the five features within ROW
41EP2838 (FB 10038)	Jornada Mogollon	Artifact scatter with features	Eligible	307 m ²	Subsurface stains	Narrow south side to avoid	Data recovery- site mostly in ROW
41EP? (FB 12147)	Unknown	Lithic scatter	Not eligible	Now only one flake			None
41EP1905 (FB 7954)	Jornada Mogollon	Artifact scatter	Not eligible		No surface cultural remains found within project area		None
41EP4998	Jornada Mogollon	Artifact scatter	Not eligible		No surface cultural remains found within project area		None
41EP5004	Jornada Mogollon	Artifact scatter	Not eligible		No surface cultural remains found within project area		None
41EP5005	Jornada Mogollon	Artifact scatter with features	Eligible		No surface cultural remains found within project area		None
41EP2503		Artifact scatter	Not eligible		No surface cultural remains found within project area		None
41EP8 (FB 10366)	Jornada Mogollon	Habitation	Eligible		Roomblock site but break down station misses most	Avoided by relocation of breakout facility	None

Note: m² = square meter.

3.10.3 Segment 2

3.10.3.1 Segment 2 (New Mexico Portion)

Segment 2 cultural resources surveys conducted in the New Mexico portion within ¼ mile of project area are listed in Table 3.10-4. Table 3.10-5 lists the previously located sites within the same area.

TABLE 3.10-4
Segment 2 Cultural Resources Surveys Conducted In and Within ¼ Mile of Project Area (New Mexico Portion)

Year	No. of Acres/Miles	Client/Sponsor	Undertaking	Performing Agency/Consultant	Reference
Segment 2 (New Mexico Portion)					
1964	N/A	NMDOT	Highway cultural inventory	NM Office of Cultural Affairs	Alexander, 1964
1981	407 miles	Arma Geophysical	Transect sampling	NMSU	Hilley, 1981
1982	3236	Grant Geophysical	Seismic	NMSU	Duran, 1982
1985	77.27	El Paso Electric Company	El Paso Electric Company Luna to Newman transmission line	John Wilson	Wilson, 1985
1985	43.73	Western New Mexico Phone Co	Telephone cable along Animas Road	U.T.-Austin	Mallouf, 1985
1983	39	NMDOT	Lordsburg rest area on I-10	NMDOT	Koczan, 1983
1979	236.36	Western Geophysical	Seismic	ENMU	MacLennan et al., 1979
1978	487.24	Exxon	Seismic Lines	NMSU	Weyer, 1978
1980	4799.25	Petty-Ray Geophysical	Geophysical testing transects	NMSU	Taylor, et al., 1980
1977	Unknown	El Paso Electric Company	345-kV line from Deming to El Paso	NMSU	Brethauer, 1977
1986	33.3	Western New Mexico Phone Co	Buried telephone cable, SW of Road Forks	Archeological Research	Nightengale, 1986
1987	403	NMDOT	I-10 east of Gage	NMDOT	Nelson, 1987
1986	2080	US Telecom	Preliminary report, fiber optic cable	Human Systems Research	Kirkpatrick and Hart, 1986
1987	127.3	NMDOT	I-10 in Deming	NMDOT	Nelson, 1987
1980	484.84	PNM	Luna to Central 115-kV line, PNM	PNM	Stein et al., 1980
1989	Unknown	BLM	All-American pipeline	NMSU	Ackerly et al., 1989

TABLE 3.10-4 (CONTINUED)

Segment 2 Cultural Resources Surveys Conducted In and Within ¼ Mile of Project Area (New Mexico Portion)

Year	No. of Acres/Miles	Client/Sponsor	Undertaking	Performing Agency/Consultant	Reference
1987	326.6	NMDOT	Cultural resource survey, I-10, MP 85.3 to 93, New Mexico	NMDOT	Nelson, 1987
1980	10,829	Geosources, Inc.	Nine hydrocarbon testing transects	NMSU	Heinsch, 1980
1992	2.78	Santa Fe pipeline	Anode site and corridor	Batcho & Kauffman Associates	Kauffman, 1992
1992	91.75	Utility Department	Afton-Mesilla pipeline	NMSU	Ackerly et al., 1992
1993	10	Lordsburg Mine District	Virginia subdistrict, Lordsburg mine district	NM Energy, Minerals, & Natl. Res. Dept	Swick, 1993
1994	11.82	El Paso Electric Company	Afton powerline extension	Batcho & Kauffman Associates	Stuart, 1994
1955	Unknown	Southern Pacific Pipeline Company	Southern Pacific pipeline	NPS	Ingmanson, 1955
1995	N/A	EcoPlan Associates, Inc.	Monitoring, Santa Fe Pacific pipeline	Soil Systems	Owens, 1995
1995	418.18	NMDOT	East bound I-10, Grant county	NMDOT	Evans, 1995
1995	25.51	Engineers, Inc.	Waterline for Lordsburg	Archaeological Services by Laura Michalik	Michalik, 1995
1995	Unknown	NM Office of Cultural Affairs MNM-Laboratory of Anthropology	Pacific-Texas pipeline	Prewitt & Associates	Boyd, 1995
1996	93.1	Southwestern Field Biologists	Santa Fe pipeline, survey and monitoring, between Steins and Separ	Human Systems Research	Mendez and Knight, 1996
1997	Unknown	Myra L. Franks & Associates	Nineteen Southern Pacific railroad segments	Ecology and Environment, Inc.	Ecology and Environment, Inc., 1997
1996	N/A	US Army Fort Bliss	Chronometric and relative chronology project	UTEP	Miller, 1996

TABLE 3.10-4 (CONTINUED)

Segment 2 Cultural Resources Surveys Conducted In and Within ¼ Mile of Project Area (New Mexico Portion)

Year	No. of Acres/Miles	Client/Sponsor	Undertaking	Performing Agency/Consultant	Reference
1999	158.79	Engineers, Inc.	Landfill, Lordsburg	Archaeological Services by Laura Michalik	Michalik, 1999
1999	2084.8	Jones & Stokes, Inc.	Union Pacific Railroad	Geo-Marine	Slaughter and Gibbs, 1999
2000	2615	El Paso Energy Communications Company	El Paso to Los Angeles Fiber Optic Cable, New Mexico	SWCA.	Wase et al. 2000
2000	802.8	PF.Net Construction Corporation	AT&T Nex/Gen Core Project, New Mexico	WCRM	Kearns et al. 2000
2001	4416	World Wide Inc.	360 networks fiber optics, NM and AZ	TRC	Railey and Yost, 2001
2001	9	PF. Net	ATT Nexgen/Core addendum	WCRM	Not submitted
2002	280	Duke Engineering & Services	Water pipeline for energy facility	Human Systems Research	Russell, 2002
2002	N/A	PF Net/AT&T	Testing ATT fiber line	WCRM	Not submitted
2002	6.2	Johnny's Septic Service	Septic service	Don Clifton	Not submitted
2002	125.8	Trigon-Sheehan Engineers	Duke Energy pipeline	La Plata	Fuller, 2002
2003	320	City of Deming	Landfill, Deming	Archaeological Services by Laura Michalik	Not submitted

Notes:

ENMU = Eastern New Mexico University

NMDOT = New Mexico Department of Transportation

NMSU = New Mexico State University

WCRM = Western Cultural Resources Management

TABLE 3.10-5
Segment 2 Previously Recorded Sites in and Within ¼ Mile of Project Area (New Mexico Portion)

Site No.	Site Type/Constituents	Cultural/Temporal Affiliation(s)	Reference
Segment 2 (New Mexico Portion)			
LA 3338PL	Artifact scatter	Mogollon	Alexander, 1964
LA 5171	Town of Separ	Anglo/Euroamerican	Kirkpatrick and Hart, 1986
LA 5594PL	Artifact scatter	Unknown	Unknown
LA 5756PL	Artifact scatter	Unknown	Alexander, 1964
LA 5951	Artifact scatter	Mogollon	Ackerly et al., 1989
LA 5952PL	Artifact scatter with mounds	Mogollon	Ingmanson, 1955
LA 5953PL	Artifact scatter with mounds	Mogollon	Ingmanson, 1955
LA 5954PL	Artifact scatter with mounds	Mogollon	Ingmanson, 1955
LA 15327PL	Artifact scatter	Unknown	Brethauer, 1977
LA 15328	Artifact scatter with hearths	Mogollon	Brethauer, 1977
LA 15329	Artifact scatter	Unknown/Anglo/Euroamerican	Brethauer, 1977
LA 15330	Artifact scatter	Archaic/Mogollon	Hilley, 1981
LA 16467	Artifact scatter with hearths	Mogollon	Weyer, 1978
LA 16468	Artifact scatter with hearths	Paleoindian/Mogollon	Ackerly et al., 1989
LA 16469	Artifact scatter	Unknown	Miller, 1996
LA 16470	Artifact scatter	Mogollon	Ackerly et al., 1989
LA 16471	Artifact scatter	Mogollon	Unknown
LA 20032	Artifact scatter with hearths	Unknown	MacLennan et al., 1979
LA 20033	Artifact scatter with hearths	Unknown	MacLennan et al., 1979
LA 21704	Artifact scatter	Unknown	Stein et al., 1980
LA 26972	Artifact scatter	Archaic/Mogollon	Heinsch, 1980
LA 27738	Artifact scatter with hearths	Mogollon	Taylor, et al., 1980
LA 27789	Dump	Unknown	Taylor, et al., 1980
LA 35175PL	Artifact scatter with hearths	Archaic/Mogollon	Hilley, 1981
LA 35176	Artifact scatter with hearths	Mogollon	Hilley, 1981
LA 35177	Artifact scatter	Mogollon	Hilley, 1981
LA 35178	Artifact scatter	Unknown	Hilley, 1981
LA 35244	Artifact scatter with hearths	Archaic/MogollonAnglo/ Euroamerican	Hilley, 1981

TABLE 3.10-5 (CONTINUED)

Segment 2 Previously Recorded Sites in and Within ¼ Mile of Project Area (New Mexico Portion)

Site No.	Site Type/Constituents	Cultural/Temporal Affiliation(s)	Reference
LA 35326	Artifact scatter/road/trail	Unknown	Duran, 1982
LA 45402	Artifact scatter/mining features	Mogollon/Anglo/Euroamerican	Koczan, 1983
LA 50129	Habitation	Hispanic	Mallouf, 1985
LA 51111PL	Artifact scatter	Archaic	Wilson, 1985
LA 53839	Habitation	Anglo/Euroamerican	Nelson, 1987
LA 54815	Town of Lisbon dump	Anglo/Euroamerican	Kirkpatrick and Hart, 1986
LA 54926	Artifact scatter	Anglo/Euroamerican	Nightengale, 1986
LA 55765	Artifact scatter	Unknown	Ackerly et al., 1989
LA 55782	Artifact scatter	Unknown	Ackerly et al., 1989
LA 55785	Artifact scatter with hearths	Archaic/Mogollon	Ackerly et al., 1989
LA 55787	Artifact scatter with midden	Unknown	Ackerly et al., 1989
LA 56186	Artifact scatter	Unknown	Unknown
LA 58972	Gage	Anglo/Euroamerican	Nelson, 1987
LA 65456	Habitation	Anglo/Euroamerican	Nelson, 1987
LA 66082	Artifact scatter	Mogollon	Boyd, 1995
LA 66083	Artifact scatter with hearths	Unknown/Mogollon	Boyd, 1995
LA 66088	Artifact scatter with hearths	Mogollon	Stuart, 1994
LA 66084	Artifact scatter	Unknown	Boyd, 1995
LA 66085	Artifact scatter	Unknown	Boyd, 1995
LA 66087	Artifact scatter with hearths	Unknown	Boyd, 1995
LA 66089	Artifact scatter	Archaic/Mogollon	Boyd, 1995
LA 66090	Artifact scatter	Mogollon	Boyd, 1995
LA 66091	Artifact scatter	Unknown	Boyd, 1995
LA 66092	Artifact scatter	Unknown	Boyd, 1995
LA 66093	Artifact scatter	Unknown	Boyd, 1995
LA 66103	Artifact scatter	Archaic/Mogollon/Apache	Boyd, 1995
LA 98662	Artifact scatter with hearth	Mogollon	Ackerly et al., 1992
LA 98663	Artifact scatter	Anglo/Euroamerican	Ackerly et al., 1992
LA 99722	Artifact scatter with hearth	Mogollon	Kauffman, 1992

TABLE 3.10-5 (CONTINUED)

Segment 2 Previously Recorded Sites in and Within ¼ Mile of Project Area (New Mexico Portion)

Site No.	Site Type/Constituents	Cultural/Temporal Affiliation(s)	Reference
LA 99986/ 140121	Mining	Anglo/Euroamerican	Swick, 1993
LA 108656	Artifact scatter	Unknown	Owens, 1995
LA 108657	Artifact scatter	Unknown	Owens, 1995
LA 108658	Artifact scatter	Unknown	Owens, 1995
LA 108756	Artifact scatter	Unknown	Owens, 1995
LA 108779	Homestead	Anglo/Euroamerican	Evans, 1995
LA 108780	Homestead	Anglo/Euroamerican	Evans, 1995
LA 108781	Artifact scatter	Anglo/Euroamerican	Evans, 1995
LA 108782	Homestead	Anglo/Euroamerican	Evans, 1995
LA 111003	Railroad	Anglo/Euroamerican	Michalik, 1995
LA 113522	Lordsburg-Hachita spur	Anglo/Euroamerican	Mendez and Knight, 1996
LA 114455	Dump	Anglo/Euroamerican	Ecology and Environment, Inc., 1997
LA 126144	Habitation	Anglo/Euroamerican	Michalik, 1999
LA 126145	Utility line	Anglo/Euroamerican	Michalik, 1999
LA 126146	Dump	Anglo/Euroamerican	Michalik, 1999
LA 127072PL	Town of Cambray	Anglo/Euroamerican	Slaughter and Gibbs, 1999
LA 127073PL	Town of Carne	Anglo/Euroamerican	Slaughter and Gibbs, 1999
LA 127074PL	Homestead	Anglo/Euroamerican	Slaughter and Gibbs, 1999
LA 128637	Artifact scatter	Mogollon	Wase et al., 2000
LA 128638	Artifact scatter	Unknown Aboriginal	Wase et al., 2000
LA 128649	Dump	Anglo/Euroamerican	Wase et al., 2000
LA 129550	Artifact scatter	Unknown	Kearns et al., 2000
LA 129551	Artifact scatter with hearths	Mogollon	Kearns et al., 2000
LA 129552	Artifact scatter with hearths	Mogollon	Kearns et al., 2000
LA 129553	Artifact scatter with hearths	Unknown/Mogollon	Kearns et al., 2000
LA 129563	Artifact scatter with hearth	Mogollon	Kearns et al., 2000
LA 129564	Artifact scatter	Unknown/Anglo/Euroamerican	Kearns et al., 2000

TABLE 3.10-5 (CONTINUED)

Segment 2 Previously Recorded Sites in and Within ¼ Mile of Project Area (New Mexico Portion)

Site No.	Site Type/Constituents	Cultural/Temporal Affiliation(s)	Reference
LA 129565	Artifact scatter	Unknown	Kearns et al., 2000
LA 129566	Artifact scatter/dump	Unknown/Anglo/Euroamerican	Kearns et al., 2000
LA 129567	Artifact scatter	Archaic	Kearns et al., 2000
LA 129568	Artifact scatter	Archaic/Mogollon	Kearns et al., 2000
LA 129569	Artifact scatter, railroad bed	Anglo/Euroamerican	Kearns et al., 2000
LA 129570	Artifact scatter	Anglo/Euroamerican	Kearns et al., 2000
LA 131163	Artifact scatter	Unknown	Railey and Yost, 2001
LA 131189	Artifact scatter	Anglo/Euroamerican	Railey and Yost, 2001
LA 131190	Homestead	Anglo/Euroamerican	Railey and Yost, 2001
LA 131191	Gas station?	Anglo/Euroamerican	Railey and Yost, 2001
LA 131194	Road	Anglo/Euroamerican	Railey and Yost, 2001
LA 132119	Nonstructural	Unknown	Wase et al., 2000
LA 132120	Structural	Unknown	Wase et al., 2000
LA 132139	Structural	Prehistoric	Not submitted
LA 132140	Structural	Historic/Prehistoric	Not submitted
LA 132142	Nonstructural	Historic/Prehistoric	Not submitted
LA 134705	Dump	Anglo/Euroamerican	Russell, 2002
LA 134707	Dump	Anglo/Euroamerican	Russell, 2002
LA 134710	Artifact scatter	Mogollon	Russell, 2002
LA 135343	Structural	Prehistoric	Not submitted
LA 135806	Structural	Historic	Not submitted
LA 136069	Artifact scatter with FCR concentrations	Unknown	Fuller, 2002
LA 141735	Structural	Historic	Not submitted
LA 141736	Nonstructural	Historic	Not submitted

Archeological sites located within the project corridor for Segment 2 in New Mexico are listed in Table 3.10-6 for both previously recorded and currently recorded sites that may be impacted by the proposed action. Fifty sites occur in New Mexico, of which 29 were recommended as NRHP eligible. One bridge (No. 1705) was observed within the project ROW and is a railroad overpass on NM 549. The bridge was built in 1930, and is a steel

stringer style of bridge. Its structure includes steel stringers, timber bents, and concrete smoke guards. It is an early railroad grade separation and has been recommended eligible to the NRHP under Criteria A and C (Van Citters, 2003). The project will have no sustained visual impact to the bridge. Construction will occur under the bridge. During construction there will be a moderate visual impact, but after construction the viewshed will return to its current condition. A monitor will be provided for all ground disturbing activities near and within the boundaries of sites determined eligible for the NRHP and for other areas determined to have a high potential for buried cultural deposits.

TABLE 3.10-6
Segment 2 Archaeological Sites in New Mexico: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/Temporal Affiliation	Approximate Size	Preliminary Assessment	Justification	Avoidance Option	Treatment
LA 16467	BLM	Artifact scatter with features	Jornada Mogollon	Now three artifacts	Not eligible	Lacks integrity, most of site gone		None
LA 144264	BLM	Artifact scatter with feature	Unknown	33 x 8 m	Not eligible	Fully recorded, no subsurface cultural remains		None
LA 66088	BLM	Artifact scatter with features	Jornada Mogollon	Now three fire-cracked rock artifacts	Not eligible	Lacks integrity, most of site gone		None
LA 145137	BLM	Artifact scatter with features	Jornada Mogollon	55 x 45 m	Eligible under D	Subsurface cultural remains	No, if this access road is built	Data recovery (features are near the access road)
LA 66083	BLM	Artifact scatter with features	Jornada Mogollon	410 x 211 m	Eligible under D	Subsurface staining	No, if the line starts where the survey began	Data recovery (only features 13, 19 out of ROW)
LA 146973	BLM	Artifact scatter	Euroamerican	21 x 17 m	Not eligible	Full recorded, lacks integrity		None
LA 146325	Private	Artifact scatter	Euroamerican	10 x 10 m	Not eligible	Fully recorded, lacks integrity		None
LA 27789	Private	Artifact scatter	Euroamerican	10 x 10 m	Not eligible	Fully recorded, no subsurface cultural remains		None
LA 66084	BLM	Artifact scatter with features	Unknown	181 x 86 m	Not eligible	Fully recorded, lacks integrity		None
LA 66090	BLM	Artifact scatter with features	Archaic/Jornada Mogollon	46 x 37 m	Not eligible	Fully recorded, lacks integrity		None

TABLE 3.10-6 (CONTINUED)

Segment 2 Archaeological Sites in New Mexico: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/ Temporal Affiliation	Approximate Size	Preliminary Assessment	Justification	Avoidance Option	Treatment
LA 66087	State Trust	Artifact scatter with features	Unknown	42 x 26 m	Eligible under D	Subsurface staining	No	Data recovery (3 features in ROW or close)
LA 66089/ LA 66091	BLM/ State Trust	Artifact scatter with features	Archaic/ Mogollon	267 x 130 m	Eligible under D	Subsurface staining	No	Limited data recovery within ROW (features outside)
LA 66093	BLM	Artifact scatter with features	Archaic/ Jornada Mogollon	285 x 122 m	Eligible under D	Subsurface staining	No	Limited data recovery within ROW (feature 1 close to ROW)
LA 132119	BLM	Artifact scatter	Unknown	Only two flakes, three fire-cracked rock	Not eligible	Fully recorded, lacks integrity		None
LA 66092	BLM	Artifact scatter	Unknown	Only three flakes, one groundstone, 13 fire-cracked rock	Not eligible	Fully recorded, lacks integrity		None
LA 146326	BLM	Artifact scatter	Euroamerican	90 x 75 m	Not eligible	Fully recorded, lacks integrity		None
LA 146327	State Trust	Artifact scatter	Unknown	90 x 85 m	Not eligible	Fully recorded, lacks integrity		None
LA 15330	BLM	Artifact scatter with features	Archaic/ Jornada Mogollon	725 x 609 m	Eligible under D	Intact subsurface features	No	Limited data recovery within ROW
LA 35176/ 35177/ 35178	Private	Artifact scatter with features	Jornada Mogollon	255 x 271 m	Eligible under D	Subsurface staining	No	Limited data recovery (most of site out of ROW)
LA 144267	Private	Artifact scatter	Unknown	238 x 131 m	Eligible under D	Subsurface FCR	No	Limited data recovery (over ½ of the site out of ROW)
LA 144272	Private	Artifact scatter with features	Unknown	125 x 75 m	Eligible under D	Subsurface staining	No	Data recovery (most of the site within ROW)
LA 127072	Private	Artifact scatter with features	Euroamerican	207 x 156 m	Eligible under D	Intact subsurface features	No	Data recovery/ archival

TABLE 3.10-6 (CONTINUED)

Segment 2 Archaeological Sites in New Mexico: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/ Temporal Affiliation	Approximate Size	Preliminary Assessment	Justification	Avoidance Option	Treatment
LA 35244	BLM	Artifact scatter with features	Archaic/ Mogollon/ Euroamerican	1600 x 150 m	Eligible under D	Intact subsurface features		None (portion of site within ROW is just artifact scatter and very disturbed.)
LA 146343	Private	Artifact scatter	Euroamerican	20 x 30 m	Not eligible	Fully recorded, lacks integrity		None
LA 144394	Private	Part of Myndus RR stop	Euroamerican	182 x 145 m	Eligible under D	Most out of ROW	No	Limited data recovery (most out of ROW)/ archival
LA 146351	Private	Artifact scatter	Euroamerican	5 x 12 m	Not eligible	Fully recorded, lacks integrity		None
LA 127073	State Trust	Carne RR stop	Euroamerican	210 x 131 m	Eligible under D	Most out of ROW	No	Limited data recovery/ archival
LA 146333	State Trust	Well shaft	Euroamerican	0.91 x 0.91 m	Not eligible	Fully recorded, lacks integrity		Because it is an open shaft, safety precautions should be taken prior to construction around the area. Treatment recommendations include either filling in the shaft or covering with steel plating
LA 146349	BLM	Artifact scatter with a feature	Euroamerican	3 x 2 m	Not eligible	Fully recorded, lacks integrity		None
LA 144392	Private	Artifact scatter	Unknown	85 x 38 m	Not eligible	Fully recorded, lacks integrity		None
LA 144273	Private	Artifact scatter with features	Unknown	52 x 37 m	Eligible under D	Subsurface staining	Narrow north to avoid	Data recovery (most of the site is within the ROW)
LA 144274	Private	Artifact scatter with feature	Archaic/ Mogollon	399 x 240 m	Eligible under D	Subsurface features	No	Limited data recovery (most of site out of ROW)
LA 144391	Private	Artifact scatter with features	Mogollon	215 x 72 m	Not eligible	Fully recorded, lacks integrity		None

TABLE 3.10-6 (CONTINUED)

Segment 2 Archaeological Sites in New Mexico: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/ Temporal Affiliation	Approximate Size	Preliminary Assessment	Justification	Avoidance Option	Treatment
LA 144389	Private	Artifact scatter with feature	Archaic	225 x 141 m	Eligible under D	Subsurface feature	No	Limited data recovery (most of site out of ROW)
LA 144271	Private	Artifact scatter with feature	Mogollon	120 x 80 m	Eligible under D	Subsurface staining	No	Data recovery (most of site within ROW)
LA 65456	Private/ NMDOT	Artifact scatter with features	Euroamerican	450 x 191 m	Eligible under D (determined by SHPO)	Subsurface cultural deposits	No	Limited data recovery/archival
LA 108658	Private	Artifact scatter	Archaic/ Euroamerican	172 x 135 m	Eligible under D	Subsurface feature	No	Limited data recovery (1 feature, out of ROW)
LA 144388	Private	Artifact scatter	Archaic	244 x 92 m	Eligible under D	Subsurface cultural remains	No	Limited data recovery (most of site out of ROW)
LA 108656/ LA 108657	Private	Artifact scatter with features	Mogollon/ Euroamerican	1321 x 307 m	Eligible under D	Subsurface staining	No	Limited data recovery (features out of ROW)
LA 108756	Private	Artifact scatter with features	Mogollon	108 x 53 m	Eligible under D	Subsurface staining	No	Limited data recovery (1 feature in ROW)
LA 144270	Private	Artifact scatter	Mogollon	153 x 107 m	Not eligible	Fully recorded, lacks integrity		None
LA 146356	Private	Artifact scatter	Euroamerican	15 x 20 m	Not eligible	Fully recorded, lacks integrity		None
LA 144269	Private	Artifact scatter	Mogollon	100 x 55 m	Not eligible	Fully recorded, no subsurface cultural remains noted		None
LA 144268	Private	Artifact scatter	Mogollon	145 x 70 m	Not eligible	Fully recorded, no subsurface cultural remains noted		None

TABLE 3.10-6 (CONTINUED)

Segment 2 Archaeological Sites in New Mexico: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/ Temporal Affiliation	Approximate Size	Preliminary Assessment	Justification	Avoidance Option	Treatment
LA 146360	Private	Trash dump	Euroamerican	100 x 82 m	Not eligible	Fully recorded, lacks integrity		None
LA 146359	Private	Trash dump	Euroamerican	625 x 650 m	Not eligible	Fully recorded, lacks integrity		None
LA 146357	Private	Artifact scatter	Euroamerican	160 x 10 m	Not eligible	Fully recorded, lacks integrity		None
LA 146358	Private	Artifact scatter	Euroamerican	15 x 20 m	Not eligible	Fully recorded, lacks integrity		None
LA 146353	Private	Artifact scatter	Euroamerican	12 x 12 m	Not eligible	Fully recorded, lacks integrity		None
LA 146354	Private	Artifact scatter	Euroamerican	10 x 10 m	Not eligible	Fully recorded, lacks integrity		None
LA 146329	Private	Irrigation ditch	Euroamerican	Linear	Not eligible	Fully recorded, lacks integrity		None
LA 146355	Private	Artifact scatter with features	Euroamerican	52 x 27 m	Not eligible	Fully recorded, lacks integrity		None
LA 146345	Private	Artifact scatter with feature	Euroamerican	120 x 20 m	Not eligible	Fully recorded, lacks integrity		None
LA 144265	Private	Artifact scatter	Archaic/ Mogollon	350 x 100 m	Eligible under D	Subsurface cultural material	No	Data recovery (most of the site is within ROW.)
LA 144393	State Trust	Artifact scatter with features	Mogollon/ Euroamerican	90 x 80 m	Not eligible	Lack of subsurface cultural remains		None
LA 144266	State Trust	Mongola RR stop	Euroamerican	470 x 80 m	Not eligible	Lack of integrity		None
LA 58972	Private	Gage RR stop	Euroamerican	664 x 288 m	Eligible under A and D	Subsurface cultural material	No	Limited data recovery (just portion within ROW)/archival

TABLE 3.10-6 (CONTINUED)

Segment 2 Archaeological Sites in New Mexico: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/ Temporal Affiliation	Approximate Size	Preliminary Assessment	Justification	Avoidance Option	Treatment
LA 146339	Private	Artifact scatter	Euroamerican	50 x 25 m	Not eligible	Fully recorded, lacks integrity		None
LA 146340	Private	Artifact scatter with features	Euroamerican	25 x 35 m	Not eligible	Fully recorded, lacks integrity		None
LA 146341	Private	Artifact scatter with features	Euroamerican	85 x 75 m	Not eligible	Fully recorded, lacks integrity		None
LA 127074	Private	RR siding of Wilna	Euroamerican	298 x 178 m	Eligible under A and D	Subsurface cultural remains related to the railroad	No	Revisit; limited data recovery
LA 146342	Private	Artifact scatter	Euroamerican	15 x 15 m	Not eligible	Fully recorded, lacks integrity		None
LA 114455	Private, BLM	Artifact scatter	Euroamerican	850 x 89 m	Not eligible (determined by SHPO)	Fully recorded, no subsurface cultural remains		None
LA 146344	Private	Artifact scatter with feature	Euroamerican	12 x 16 m	Not eligible	Fully recorded, lacks integrity		None
LA 5171	Private	Separ	Euroamerican	765 x 168 m	Eligible under A and D (determined by SHPO)	Intact subsurface features	No	Data recovery (portion within ROW)/archival
LA 146350	BLM	Artifact scatter	Euroamerican	60 x 25 m	Not eligible	Fully recorded, lacks integrity		None
LA 144275	Private	Lithic scatter	Unknown	94 x 80 m	Not eligible	Fully recorded, no subsurface cultural remains		None
LA 144276	Private	Artifact scatter with features	Mogollon	188 x 95m	Eligible under D	Subsurface fire-cracked rock	No	Limited data recovery

TABLE 3.10-6 (CONTINUED)

Segment 2 Archaeological Sites in New Mexico: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/ Temporal Affiliation	Approximate Size	Preliminary Assessment	Justification	Avoidance Option	Treatment
LA 144277	Private	Artifact scatter	Unknown	147 x 105 m	Not eligible	Fully recorded, lacks integrity		None
LA 131194	State Trust	Historic road	Euroamerican	90 x 16 m	Not eligible	Fully recorded, no subsurface cultural remains		None
LA 111003	Private	Railroad	Euroamerican	65 x 17 m	Eligible under D (determined by SHPO)	Associated with railroad		Bore under
LA 128649	Private	Trash dump	Euroamerican	480 x 178 m	Eligible under D (determined by SHPO)	Subsurface cultural remains	No	Limited data recovery/archival (portion within ROW)
LA 146348	Private	Artifact scatter	Euroamerican	100 x 100 m	Not eligible	Fully recorded, lacks integrity		None
LA 113522	BLM	Railroad	Euroamerican	167 x 14 m	Not eligible (determined by SHPO)	Lacks integrity		None
LA 146352	State Trust	Artifact scatter with features	Euroamerican	90 x 75 m	Not eligible	Fully recorded, lacks integrity		None
LA 146334	BLM	Rock cairn	Unknown	1.3 x 1.3 m	Not eligible	Fully recorded, lacks integrity		None
LA 146335	BLM	Rock cairn	Euroamerican	2 x 2 m	Not eligible	Fully recorded, lacks integrity		None
LA 146346	BLM	Mining prospect	Euroamerican	65 x 70 m	Not eligible	Fully recorded, lacks integrity		None
LA 146337	BLM	Rock cairn	Euroamerican	1 x 1 m	Not eligible	Fully recorded, lacks integrity		None
LA 146338	State Trust	Rock cairn	Euroamerican	1 x 1 m	Not eligible	Fully recorded, lacks integrity		None

TABLE 3.10-6 (CONTINUED)

Segment 2 Archaeological Sites in New Mexico: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/Temporal Affiliation	Approximate Size	Preliminary Assessment	Justification	Avoidance Option	Treatment
LA 146347	BLM	Artifact scatter	Euroamerican	69 x 54 m	Not eligible	Fully recorded, lacks integrity		None
LA 56186	BLM	Lithic scatter	Unknown	30 m	Not eligible	Fully recorded, lacks integrity		None

3.10.3.2 Segment 2 (Arizona Portion)

Segment 2 cultural resources surveys conducted in the Arizona portion within 1 mile of project area are listed in Table 3.10-7. Table 3.10-8 lists the previously located sites within the same area.

TABLE 3.10-7

Segment 2 Cultural Resources Surveys Conducted In and Within 1 Mile of Project Area (Arizona Portion)

Year	No. of Acres/ Miles	Client/Sponsor	Undertaking	Performing Agency/ Consultant	Reference
Segment 2 (Arizona Portion)					
1955	275 miles	Southern Pacific Pipeline	Pipeline	ASM	Holzkamper and McConville, 1955
1979	91.1 miles	MileHi Exploration	Seismographic Lines	ASM	Brew and Ervin, 1979 Mallouf, 1980
1982	56.5 miles	Petty-Ray Geophysical	Seismographic Lines	Powers	Frampton and Parry, 1982
1987	862 acres	US Telecom	Fiber Optic Line	Dames and Moore	O'Brien et al., 19887
1988	542 acres/ 68 miles	MCI	Fiber Optic Line	Dames and Moore	Bruder et al., 1988
1992	23.7 acres	Arizona Dept. of Transportation	Rest Area	Archaeological Research Services	Hathaway, 1992
1993	(not specified)	El Paso Natural Gas	Pipeline	Archaeological Research Services	Jensen, 1993
1994	3 miles	El Paso Natural Gas	Pipeline	Archaeological Research Services	Jensen, 1993
1994	8 miles	Valley Telephone Cooperative	Fiber Optic Line	Lone Mountain Archaeology	Seymour and Orozco, 1994

TABLE 3.10-7

Segment 2 Cultural Resources Surveys Conducted In and Within 1 Mile of Project Area (Arizona Portion)

Year	No. of Acres/ Miles	Client/Sponsor	Undertaking	Performing Agency/ Consultant	Reference
1999	641 acres	Parsons Brinkerhoff Network Services	Fiber Optic Line	SWCA	Doak, David P., 2001
2000	2.3 miles	Valley Telephone Cooperative	Fiber Optic Line	Lone Mountain Archaeology	Wondrasek and Knoblock, 2001
2000	307 miles	AT&T	Fiber Optic Line	Western Cultural Resource Management	Kearns et al., 2001
2001	40 acre	Boyd-Cochran Ventures	Mine	Old Pueblo Archaeology Center	McKee, 2001

TABLE 3.10-8

Segment 2 Previously Recorded Sites in and Within 1 Mile of Project Area (Arizona Portion)

Site No.	Site Type/Constituents	Cultural/ Temporal Affiliation(s)	Reference
Segment 2 (Arizona Portion)			
AZ AA:7:505 (ASM)	Linear: pipeline	Euro-American/Late Historic	Baker, 2001
AZ CC:16:21 (ASM)	Linear: county road	Euro-American/Late Historic	Tucker and Hesse, 2000
AZ CC:16:9 (ASM)	Artifact scatter: flaked stone	San Simon Mogollon/ unspecified	Mallouf, 1979
AZ CC:16:20 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	San Simon Mogollon/ post- 1150	Tucker and Hesse, 2000
AZ CC:16:22 (ASM)	Linear: county road	Euro-American/Late Historic	Tucker and Hesse, 2000
AZ CC:16:13 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	San Simon Mogollon/ unspecified	Parry and King, 1982
AZ CC:16:14 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	San Simon Mogollon/ unspecified	Kinkade, 1976; Donnelly, 1984
AZ CC:16:23 (ASM)	Linear: county road	Euro-American/ Late Historic	Tucker and Hesse, 2000
AZ CC:16:74 (ASM)	Artifact scatter: sherds, flaked stone	San Simon Mogollon/ unspecified	Tucker and Hesse, 2000
AZ CC:15:75 (ASM)	Linear: county road	Euro-American/ Late Historic	Tucker and Hesse, 2000
AZ CC:16:76 (ASM)	Linear: county road	Euro-American/ Late Historic	Tucker and Hesse, 2000
AZ CC:16:80 (ASM)	Water control devices	Euro-American/ Late Historic	Tucker and Hesse, 2000

Archeological sites located within the project corridor for Segment 2 in Arizona are listed in Table 3.10-9 for both previously recorded and currently recorded sites that may be impacted by the proposed action. Three of these sites were recommended as NRHP eligible. Data recovery would be limited to the areas of potential effect. A monitor will be provided for all ground disturbing activities near and within the boundaries of sites determined eligible for the NRHP and for other areas determined to have a high potential for buried cultural deposits.

TABLE 3.10-9
Segment 2 Archaeological Sites in Arizona: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/ Temporal Affiliation	Approx. Size	Preliminary Assessment	Avoidance	Comments	Treatment
AZ CC:16:30 (ASM)	BLM	Features with associated artifacts	Mogollon, San Simon Branch/ unspecified period	160 x 85 m	Eligible under D	Yes	Roasting pits with low-density scatter of sherds, flaked and ground stone; subsurface deposits likely	Fence and avoid
AZ CC:16:36 (ASM)	Private	Linear	Euroamerican/ Late Historic	10 ft (width)	Eligible under A	Yes	EPNG pipeline	Avoid
AZ CC:16:31 (ASM)	Private	Artifact scatter	Euroamerican/ Late Historic	45 x 20 m	Not eligible		High-density scatter/dump of historic and recent refuse	No treatment
AZ CC:16:22 (ASM)	Cochise County	Linear	Euroamerican/ Late Historic	25 ft (width)	Not eligible		Regularly maintained county road	No treatment
AZ CC:16:33 (ASM)	Private	Artifact scatter	Mogollon, San Simon Branch/ 1050-1100	30 x 25 m	Eligible under D	Possibly	Low-density scatter of sherds, flaked and ground stone, fire-cracked rock; subsurface deposits possible	Phase I data recovery
AZ CC:16:34 (ASM)	Private	Artifact scatter	Mogollon, San Simon Branch/ unspecified period	40 x 20 m	Eligible under D	Possibly	Low-density scatter of sherds, flaked and ground stone, fire-cracked rock; subsurface deposits possible	Phase I data recovery
AZ CC:16:35 (ASM)	BLM	Artifact scatter	Euroamerican/ Late Historic	70 x 25 m	Not eligible	No	Low-density scatter of historic refuse	No treatment
AZ CC:16:23 (ASM)	Cochise County	Linear	Euroamerican/ Late Historic	25 ft (width)	Not eligible		Regularly maintained county road	No treatment

TABLE 3.10-9 (CONTINUED)

Segment 2 Archaeological Sites in Arizona: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/ Temporal Affiliation	Approx. Size	Preliminary Assessment	Avoidance	Comments	Treatment
AZ CC:16:87 (ASM)	ASLD	Artifact scatter	Mogollon, San Simon Branch/ unspecified period	35 x 20 m	Not eligible		Low-density flake scatter on bedrock	No treatment
AZ CC:15:75 (ASM)	Cochise County	Linear	Euroamerican/ Late Historic	25 ft (width)	Not eligible		Regularly maintained county road	No treatment

3.10.4 Segment 3

Tables 3.10-10 and 3.10-11 present the prefield Class I inventory of cultural resources surveys and previously recorded sites that was conducted for Segment 3. Existing data were compiled from the files at the Arizona State Historic Preservation Office (SHPO) and the Arizona State Museum (ASM) Archaeological Records Office, and from the AZSITE Database. Additional sources of information were the ASM Archives, the ASM Library, the University of Arizona Library Special Collections, the Arizona State Historical Society Library, and the BLM General Land Office (GLO) Records Database. Copies of GLO plats were obtained from the BLM Public Lands Information Center; historic USGS 15-minute and other maps were consulted in the University of Arizona Library map collection.

TABLE 3.10-10

Segment 3 Cultural Resources Surveys Conducted In and Within 1 Mile of Project Area

Year	No. of Acres/ Miles	Client/Sponsor	Undertaking	Performing Agency/ Consultant	Reference
Segment 3					
1955	275 miles	Southern Pacific Pipeline	Pipeline	ASM	Holzkamper and McConville, 1955
1973	(not specified)	USBR	Aqueduct	ASM	Grady, 1973
1974	240 miles	Arizona Public Service	Power Line	ASM	Teague and Mayro, 1974
1980	66 miles	Tucson Electric Power	Power Line	John P. Wilson	Wilson, 1980
1980	6,200 acres	USBR	Aqueduct	ASM	McCarthy, 1982
1980	20 acres	Arizona Dept. of Transportation		ASM	

TABLE 3.10-10 (CONTINUED)

Segment 3 Cultural Resources Surveys Conducted In and Within 1 Mile of Project Area

Year	No. of Acres/ Miles	Client/Sponsor	Undertaking	Performing Agency/ Consultant	Reference
1981	2 miles	Tucson Electric Power	Power Line	WNMU	Wilson, 1981
1982	100 acres/ 6 miles	USBR	Aqueduct	ASM	Czaplicki et al., 1984
1982	9 acres/ 70 miles	USBR	Aqueduct	ASM	Czaplicki et al., 1983
1983	45,490 acres	USBR, SHPO, ASLD, NSF	Tucson Basin Survey	ASM	Fish et al., 1992, 1993
1983	1 acre	Southern Pacific Pipeline	Pipeline	ASM	Madsen, 1983
1984	1,035 acres	USBR	Aqueduct	Northland Research	Marmaduke, 1993
1984	3 miles	Trico Electric Cooperative	Power Line	ASM	Castalia, 1984
1985	700 acres	USBR	Petroglyph Study	Institute for American Research	Wallace and Holmlund, 1986
1986	11.8 miles	USBR	Aqueduct	Northland Research	
1987	3.4 miles	Arizona Public Service	Power Line	Archaeological Consulting Services	Rankin, 1987
1987	19.3 acres/ 1.1 miles	USBR	Task 42 ROW	Northland Research	
1988	1.1 acres	Arizona Public Service	Power Line	Archaeological Consulting Services	Macnider, 1988
1988	506.9 acres	USBR	Aqueduct	Northland Research	Van Nimwegen and Henderson, 1991
1988	4.7 acres	Ray Stevens Paving	Landfill	Northland Research	Dosh, 1988
1989	1.4 acres/ 2,000 ft	USBR	Aqueduct	USBR	Lincoln, 1989
1989	0.3 acre	Sun Space Ranch Biosphere	Soil Sampling	Desert Archaeology	Bernard-Shaw, 1989
1989	102.9 acres	USBR	Construction Facilities	Northland Research	Van Nimwegen and Henderson, 1991

TABLE 3.10-10 (CONTINUED)

Segment 3 Cultural Resources Surveys Conducted In and Within 1 Mile of Project Area

Year	No. of Acres/ Miles	Client/Sponsor	Undertaking	Performing Agency/ Consultant	Reference
1992	3.1 miles	Arizona State Parks	Fence	Arizona State Parks	Montero, 1992
1992	29 miles	Santa Fe Pacific Pipeline	Pipeline	Archaeological Consulting Services	Crary, 1992
1992	17.8 miles	Arizona Dept. of Transportation	Highway ROW	Archaeological Research Services	Wright, 1992
1992	20 miles	Santa Fe Pacific Pipeline	Pipeline	Archaeological Consulting Services	Adams, 1992
1992	20 miles	Santa Fe Pacific Pipeline	Pipeline	Archaeological Consulting Services	Crary and Macnider, 1992
1994	70 acres	SCS Engineers	Environmental Restoration	SWCA	Roberts, 1994
1995	85 miles	DOE	Power Line	Western Cultural Resource Management	Moreno et al., 1996
1997	1.4 acre	San Xavier Rock and Minerals	Boreholes, Access Roads	Old Pueblo Archaeological Center	Jones, 1997
1997	59 miles	Woodward-Clyde Federal Services	Power Line	Desert Archaeology	Lindeman, 1997
1997	15.8 miles	Arizona Dept. of Transportation	Highway ROW	Archaeological Research Services	Lite and Cadiente, 1997
1998	40.2 miles	Arizona Dept. of Transportation	Highway ROW	Archaeological Research Services	Barz, 1998
1998	19.7 miles	Arizona Dept. of Transportation	Highway ROW	Archaeological Research Services	Woodall, 1999
1998	31.5 acres/ 25.4 miles	Southwest Gas	Pipeline	Tierra	Fratt and Rude, 1999
1999	.3 mile	Parsons	Fence line	Arizona State Land Dept.	Rozen, 1999
2000	1,332 acres/ 0.9 mile	El Paso Natural Gas	Pipeline	Archaeological Consulting Services	Punzmann, 2000
2000	11 acres	Kinder Morgan Energy Partners	Pipeline Repair	URS	Ramos et al., 2001

TABLE 3.10-10 (CONTINUED)

Segment 3 Cultural Resources Surveys Conducted In and Within 1 Mile of Project Area

Year	No. of Acres/ Miles	Client/Sponsor	Undertaking	Performing Agency/ Consultant	Reference
2000	307 miles	AT&T	Fiber Optic Line	Western Cultural Resource Management	Kearns et al., 2001
2000	1,580 acres	EcoPlan Associates	Highway ROW	Archaeological Research Services	Barnes, 2000
2001	.1 acre	Westland Resources	Well Site	Old Pueblo Archaeology Center	Jones and Dart, 2001
2001	4,200 ft	Susan E. Loosen		Old Pueblo Archaeology Center	Jones, 2001
2001	3.7 acres/ 11 miles	Westland Resources	Sewer Line	Old Pueblo Archaeology Center	Jones and Dart, 2001,2002
2001	246 acres/ 505.5 miles	PF.Net Construction	Fiber Optic Line	Western Cultural Resource Management	Baker and Webb, 2001
2001	15.5 miles	Tucson Electric Power	Power Line	Engineering and Environmental Consultants	Fuller, 2001
2001	7.8 acres/ 0.1 mile	PF.Net Construction	Op Amp Facilities	Western Cultural Resource Management	Baker and Kearns, 201
2002	282 acres	Diamond Ventures.	Housing	Old Pueblo Archaeology Center	Jones and Dart, 2002
2003	5.9 acres	Tucson Electric Power	Power Pole Replacement	Harris Environmental Group, Inc.	Knoblock and Hathaway, 2002

Notes:

DOE = U.S. Department of Energy.

USBR = U.S. Bureau of Reclamation.

WNMU = Western New Mexico University.

TABLE 3.10-11
Segment 3 Previously Recorded Sites in and Within 1 Mile of Project Area

Site No.	Site Type/Constituents	Cultural/Temporal Affiliation(s)	Reference
Segment 3			
AZ AA:12:741 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ pre-Classic	Adams et al., 2000
AZ AA:12:898 (ASM)	Artifact scatter: sherds	Hohokam/ pre-Classic, Classic	Baker and Smith, 2001
AZ AA:12:870 (ASM)	Linear: Cortaro Farms Canal.	Euroamerican/Late Historic	Barnes, 2000
AZ AA:7:462 (ASM)	Former SPRR Red Rock Station	Euroamerican/ Middle-Late Historic	Crary, 1992 Greenwald, 2000
AZ AA:7:506 (ASM)	Linear: pipeline	Euroamerican/Late Historic	Baker, 2001
AZ AA:7:6 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ pre-Classic	Wright and McCarthy, 1980
AZ AA:7:32 (ASM)	Rock pile with assoc. sherds, flaked stone, ground stone	Hohokam/ unspecified	Wright and McCarthy, 1980
AZ AA:7:461 (ASM)	Rock alignment	Hohokam/ unspecified	Hackbarth and Hutira, 1989
AZ AA:7:504 (ASM)	Former highway maintenance yard/roadside park	Euroamerican/Late Historic	Baker, 2001
AZ AA:7:463 (ASM)	Railroad ties	Euroamerican/ Late Historic	Crary, 1992
AZ AA:7:71 (ASM)	Roasting pits with assoc. sherds, flaked stone, ground stone	Hohokam/ unspecified	Downum, 1982
AZ AA:7:502 (ASM)	Picacho Pass Skirmish Site	Euroamerican/ Middle Historic	Strader et al., 2000
AZ AA:7:72 (ASM)	Roasting pits with assoc. sherds, flaked stone, ground stone	Hohokam/ unspecified	Downum, 1982
AZ AA:7:16 (ASM)	Bedrock mortars and petroglyphs with assoc. sherds	Hohokam/ unspecified	Ayres, 1967
AZ AA:7:74 (ASM)	Roasting pit with assoc. sherds, flaked stone, ground stone	Hohokam/ pre-Classic	Downum, 1982
AZ AA:7:456 (ASM)	Rock alignments, rock piles, and rock rings	Unknown	Hackbarth and Hutira, 1989
AZ AA:7:17 (ASM)	Bedrock mortars	Hohokam/ unspecified	Ayres, 1967
AZ AA:7:454 (ASM)	Artifact scatter: sherds, flaked stone	Hohokam/ unspecified	Hackbarth and Hutira, 1989
AZ AA:7:455 (ASM)	Artifact scatter: sherds, flaked stone, historic refuse	Hohokam/ unspecified; Euroamerican/ Late Historic	Hackbarth and Hutira, 1989
AZ AA:7:55 (ASM)	Rock alignments with assoc. sherds	Hohokam/ unspecified	Dart and Mayberry, 1982

TABLE 3.10-11 (CONTINUED)

Segment 3 Previously Recorded Sites in and Within 1 Mile of Project Area.

Site No.	Site Type/Constituents	Cultural/Temporal Affiliation(s)	Reference
AZ AA:7:33 (ASM)	Artifact scatter: sherds, flaked stone, historic refuse	Hohokam/ unspecified; Euroamerican/ Middle-Late Historic	McCarthy, 1980
AZ AA:7:30 (ASM)	Rock piles and rock rings with assoc. sherds, flaked stone, ground stone	Hohokam/ unspecified	McCarthy, 1980
AZ AA:7:88 (ASM)	Hearth with assoc. flaked stone, ground stone	Hohokam/ unspecified	Quillian, 1986
AZ AA:7:465 (ASM)	Former SPRR Picacho Station	Euroamerican/ Late Historic	Crary et al., 1992
AZ AA:7:464 (ASM)	Artifact scatter: sherds	O'Odham/ Protohistoric-Historic; Euroamerican/ Late Historic	Crary et al., 1992
AZ AA:6:69 (ASM)	House foundation	Euroamerican/ Late Historic	Doak, 1999
AZ T:10:84 (ASM)	Linear: SPRR (now UPRR) Picacho-Phoenix-Wellton Loop	Euroamerican/ Late Historic	Woodall et al., 1994 Kearns, 2000
AZ AA:6:63 (ASM)	Artifact scatter: sherds, flaked stone	Hohokam/ unspecified	Dart and Mayberry, 1982
AZ AA:6:47 (ASM)	Artifact scatter: sherds	Hohokam/ pre-Classic	Crary et al., 1992
AZ AA:6:51 (ASM)	Trash mound and possible ball court with assoc. sherds, flaked stone, ground stone, shell	Hohokam/ Classic	Euler and Roberts, 1994
AZ AA:2:118 (ASM)	Linear: SR 84	Euroamerican/ Late Historic	Wright, 1992; Baker, 2001
AZ AA:11:30 (ASM)	Artifact scatter: historic refuse	Euroamerican/ Late Historic	Rosenberg, 1984
AZ AA:8:79 (ASM)	Hearth with assoc. sherds, flaked stone, ground stone	Hohokam/ unspecified	Field, 1985
AZ AA:7:503 (ASM)	Linear: road to Marana Air Base	Euroamerican/ Late Historic	Baker, 2001
AZ AA:7:24 (ASM)	Artifact scatter: sherds (site destroyed)	Hohokam/ unspecified	Lange, 1980
AZ AA:7:34 (ASM)	Artifact scatter: historic refuse	Unknown	McCarthy, 1980
AZ AA:7:5 (ASM)	Artifact scatter: sherds	Hohokam, unspecified	Wasley, 1958
AZ AA:7:73 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ unspecified	Downum, 1982
AZ AA:7:66 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ unspecified	Dart and Mayberry, 1982
AZ AA:7:65 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ unspecified	Dart and Mayberry, 1982

TABLE 3.10-11 (CONTINUED)

Segment 3 Previously Recorded Sites in and Within 1 Mile of Project Area.

Site No.	Site Type/Constituents	Cultural/Temporal Affiliation(s)	Reference
AZ AA:6:48 (ASM)	Artifact scatter: sherds, flaked stone, ground stone, shell	Hohokam/ pre-Classic	Crary et al., 1992
AZ Z:2:40 (ASM)	Linear: former SPRR Transatlantic Route, now UPRR main line	Euroamerican/ Middle-Late Historic	Woodall et al., 1994.
AZ AA:2:176 (ASM)	Linear: county road	Euroamerican/Late Historic	Stone et al., 1998
AZ AA:2:175 (ASM)	Linear: county road	Euroamerican/ Late Historic	Stone et al., 1998
AZ AA:2:123 (ASM)	Artifact scatter: sherds, flaked stone	Hohokam/ pre-Classic	Crary et al., 1992
AZ AA:2:72 (ASM)	Artifact scatter: sherds, flaked stone	Hohokam/ Classic	Kenny, 1984
AZ AA:2:73 (ASM)	Artifact scatter: sherds, ground stone	Hohokam/ pre-Classic	Kenny, 1984
AZ AA:2:74 (ASM)	Artifact scatter: sherds, flaked stone	Hohokam/ unspecified	Marmaduke, 1993
AZ AA:2:75 (ASM)	Artifact scatter: sherds, flaked stone	Hohokam/ pre-Classic	Kenny, 1984
AZ AA:2:122 (ASM)	Artifact scatter: sherds, flaked stone	Hohokam/ pre-Classic O'Odham/ Protohistoric-Historic	Crary et al., 1992
AZ AA:2:65 (ASM)	Artifact scatter: sherds	Hohokam/ pre-Classic	Wasley, 1963; Skibo, 1984
AZ AA:2:101 (ASM)	Structural mound and trash mound with assoc, sherds, flaked stone, ground stone, shell	Hohokam/Classic	Skibo, 1984; Adams, 1992
AZ AA:2:116 (ASM)	Artifact scatter: sherds, flaked stone	Hohokam/pre-Classic, Classic	Skibo, 1984
AZ AA:2:142 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/pre-Classic, Classic	Barz and Neeley, 1998
AZ AA:2:71 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ Classic	Kenny, 1984
AZ AA:7:31 (ASM)	Rock piles with assoc. sherds, flaked stone	Hohokam/ unspecified	Wright and McCarthy, 1980
AZ AA:7:457 (ASM)	Rock alignment and rock rings with assoc. sherds	Hohokam/ unspecified	Hackbarth and Hutira, 1989
AZ AA:7:459 (ASM)	Rock rings with assoc. sherds	Hohokam/ unspecified	Hackbarth and Hutira, 1989
AZ AA:7:247 (ASM)	Roasting pit with assoc. sherds, flaked stone, ground stone	Hohokam/ unspecified	Bayman, 1985
AZ AA:7:259 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ unspecified	Ervin, 1985

Table 3.10-12 presents NRHP eligibility and treatment recommendation for both previously recorded and currently recorded sites in Segment 3 that may be impacted by the proposed action. Thirteen of these sites were recommended as NRHP eligible. A monitor will be provided for all ground disturbing activities near and within the boundaries of sites determined eligible for the NRHP and for other areas determined to have a high potential for buried cultural deposits.

TABLE 3.10-12
Segment 3 Archaeological Sites in Arizona: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/Temporal Affiliation	Approx. Size	Preliminary Assessment	Avoidance	Comments	Treatment
AZ AA:7:528 (ASM)	Private	Artifact scatter	Hohokam/ unspecified period	110 x 50 m	Eligible under D		Low-density scatter of sherds, flaked and ground stone, fire- cracked rock	Phase I data recovery
AZ AA:7:462 (ASM)	UPRR	Features with associated artifacts	Euroamerican/ Middle-Late Historic	500 x 160 ft	Eligible under A, C	Yes	Former SPRR Red Rock Station; remainder of site lacks integrity	Avoid
AZ AA:7:529 (ASM)	ASLD, Private	Features with associated artifacts	Euroamerican/ Late Historic	460 x 130 ft	Eligible under A, D	No	Remains of water control features and corral with low-density scatter of metal artifacts	Phase I data recovery
AZ AA:7:506 (ASM)	ASLD	Linear	Euroamerican/ Late Historic	10 ft (width)	Not eligible	Yes	EPNG pipeline	Avoid
AZ AA:7:6 (ASM)	ASLD	Artifact scatter	Hohokam/ pre- Classic	600 x 140 m	Eligible under D	No	Low-to-medium- density scatter of sherds, flaked and ground stone; subsurface deposits possible	Phase I data recovery (and II if needed)
AZ AA:7:530 (ASM)	Private	Artifact scatter	Hohokam/ unspecified period	30 x 10 m	Eligible under D	Possibly	Low-density scatter of sherds; subsurface deposits unlikely	Phase I data recovery
AZ AA:7:531 (ASM)	ASLD	Linear	Euroamerican/ Middle Historic	520 x 20 ft	Eligible under A, C	Yes	Remains of grade and trestle of 1880 SPRR route (realigned 1897)	Mitigative documenta- tion
AZ AA:7:532 (ASM)	ASLD	Artifact scatter	Hohokam/ unspecified period	15 x 10 m	Eligible under D	No	Low-density scatter of sherds and flaked stone; subsurface deposits not likely	Phase I data recovery

TABLE 3.10-12 (CONTINUED)

Segment 3 Archaeological Sites in Arizona: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/ Temporal Affiliation	Approx. Size	Preliminary Assessment	Avoidance	Comments	Treatment
AZ AA:7:505 (ASM)	Private	Linear	Euroamerican/ Late Historic	10 ft (width)	Eligible under A	Yes	EPNG pipeline	Avoid
AZ AA:7:533 (ASM)	ASLD	Artifact scatter	Hohokam/ unspecified period	15 x 15 m	Eligible under D	No	Low-density scatter of sherds and flaked stone; subsurface deposits unlikely	Phase I data recovery
AZ AA:7:33 (ASM)	ASLD	Artifact scatter	Hohokam/ unspecified period	30 x 25 m	Eligible under D	No	Low-density scatter of sherds, flaked stone; subsurface deposits unlikely	Phase I data recovery
AZ T:10:84 (ASM)	UPRR	Linear	Euroamerican/ Late Historic	45 ft (width)	Eligible under A	Yes	SPRR (now UPRR) Picacho- Phoenix-Wellton Loop	Avoid
AZ AA:2:118 (ASM)	Pinal County	Linear	Euroamerican/ Late Historic	60 ft (width)	Eligible under A	Yes	SR 84	Avoid
AZ AA:6:48 (ASM)	UPRR	Artifact scatter	Hohokam/ pre- Classic	175 x 100 m	Eligible under D	No	Low-to-medium- density scatter of sherds flaked and ground stone, shell; subsurface deposits possible	Phase I data recovery (and II if needed)
AZ Z:2:40 (ASM)	UPRR	Linear	Euroamerican/ Middle-Late Historic	45 ft (width)	Eligible under A	Yes	Former SPRR Transcontinental Route, now UPRR main line	Avoid
AZ AA:6:96 (ASM)	UPRR	Artifact scatter	Hohokam/ pre- Classic	110 x 35 m	Eligible under D	No	Low-to-medium- density scatter of sherds and flaked stone; subsurface deposits possible.	Phase I data recovery (and II if needed)
AZ AA:2:176 (ASM)	Pinal County	Linear	Euroamerican/ Late Historic	25 ft (width)	Not eligible		Regularly maintained county road	No treatment
AZ AA:2:175 (ASM)	Pinal County	Linear	Euroamerican/ Late Historic	25 ft (width)	Not eligible		Regularly maintained county road	No treatment

TABLE 3.10-12 (CONTINUED)

Segment 3 Archaeological Sites in Arizona: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/Temporal Affiliation	Approx. Size	Preliminary Assessment	Avoidance	Comments	Treatment
AZ AA:2:123 (ASM)	UPRR	Artifact scatter	Hohokam/ pre-Classic	200 x 40 m	Eligible under D	No	Medium-density scatter of sherds, flaked stone; subsurface deposits possible	Phase I data recovery (and II if needed)
AZ AA:2:122 (ASM)	UPRR	Artifact scatter	Hohokam/ pre-Classic; O'odham/ Protohistoric-Historic	130 x 60 m	Eligible under D	No	Medium-density scatter of sherds, flaked stone; subsurface deposits possible	Phase I data recovery (and II if needed)

3.10.5 Segment 4

Tables 3.10-13 and 3.10-14 present the prefield Class I inventory of cultural resources surveys and previously recorded sites that was conducted for Segment 4. Existing data was compiled from the files at the Arizona State Historic Preservation Office (SHPO) and the Arizona State Museum (ASM) Archaeological Records Office, and from the AZSITE Database. Additional sources of information were the ASM Archives, the ASM Library, the University of Arizona Library Special Collections, the Arizona State Historical Society Library, and the BLM General Land Office (GLO) Records Database. Copies of GLO plats were obtained from the BLM Public Lands Information Center; historic USGS 15-minute and other maps were consulted in the University of Arizona Library map collection.

TABLE 3.10-13

Segment 4 Cultural Resources Surveys Conducted In and Within 1 Mile of Project Area

Year	No. of Acres/Miles	Client/Sponsor	Undertaking	Performing Agency/ Consultant	Reference
Segment 4					
1955	275 miles	Southern Pacific Pipeline	Pipeline	ASM	Holzkamper and McConville, 1955
1964	7868 sq. miles	Maricopa Co. Dept. of Parks and Recreation	Archaeological Reconnaissance	ASM	Ayres, 1965
1969	14 miles	El Paso Natural Gas	Pipeline	ASM	
1980	19.2 miles	Provident Energy	Pipeline	ASM	
1980	(not specified)	Arizona Dept. of Transportation	Materials Pit	ASM	
1980	100 acres	Casa Grande Copper	Mining Easement	ASM	Madsen, 1980

TABLE 3.10-13 (CONTINUED)

Segment 4 Cultural Resources Surveys Conducted In and Within 1 Mile of Project Area

Year	No. of Acres/Miles	Client/Sponsor	Undertaking	Performing Agency/ Consultant	Reference
1983	10 acres	Pinal County	State Land Survey	ASM	Lange, 1983
1984	7.4 acres	Pinal County	State Land Survey	ASM	Lange, 1984
1984	3.6 acres/ 0.8 mile	Pinal County	State Land Survey	ASM	Lange, 1984
1985	0.7 acre	W. A. and D. Dunn	State Land Survey	ASM	
1986	591 acres/ 18.9 miles	Bureau of Reclamation	Aqueduct	Northland Research	
1986	267 acres/ 22 miles	Dibble and Associates	ROW	ARS	Fedick, 1986
1986	85 acres	Gila River Housing Authority	Housing	ASM	Sires, 1986
1987	(not specified)	Superstition Crushing	Drilling	ASM	Euler, 1987
1987	342 acres	K. K. Skousen	State Land Survey	Casa Grande Historical Museum	Smithwick, 1987
1988	7.8 miles	USBR	Pipeline	USBR	MacDonald, 1988
1988	120 acres	Calmat Co.	State Land survey	ASM	Roth, 1988
1989	345 miles	Pinal County	Highway ROW	Archaeological Consulting Services	Adams, 1989
1991	312 acres/ 63.2 miles	El Paso Natural Gas	Pipelines	Archaeological Consulting Services	Neily, 1991
1992	3.4 acres	USBR	Ditch Easement	USBR	Telles, 1992
1992	29 miles	Santa Fe Pacific Pipeline	Pipeline	Archaeological Consulting Services	Crary, 1992
1992	20 miles	Santa Fe Pacific Pipeline	Pipeline	Archaeological Consulting Services	Crary and Macnider, 1992
1992	6.1 miles	Maricopa Domestic Water District	Pipeline	SWCA	Roberts, 1992
1993	18.6 acres	El Paso Natural Gas	Cathodic Station	Archaeological Consulting Services	Troncone, 1993
1994	118.2 acres	Arizona Dept. of Transportation	Realignment	Archaeological Consulting Services	Crary, 1994
1995	64 acres	Maricopa Co. Dept. of Transportation	Highway ROW	Soil Systems	Owens, 1995
1996	41.4 miles	SFC Engineering	Fiber Optic Line	Archaeological Research Services	Lite et al., 1996
1997	6.6 miles	Maricopa Co. Dept. of Transportation	Highway ROW	Dames and Moore	Shepard and Rogge, 1997

TABLE 3.10-13 (CONTINUED)

Segment 4 Cultural Resources Surveys Conducted In and Within 1 Mile of Project Area

Year	No. of Acres/Miles	Client/Sponsor	Undertaking	Performing Agency/ Consultant	Reference
1997	121.2 acres	Coe and Van Loo Consultants	Santa Rosa Wash	Archaeological Research Services	Wright, 1997
1998	6 miles	Maricopa Domestic Water District	Pipeline, Wells	Northland Research	Walsh, 1998
1998	135.2 acres	City of Phoenix	Pipeline	Logan Simpson Design	Shaw, 2000
1999	56 acres	Richmond American Homes	Housing	Northland Research	Walsh-Anduze, 1999
1999	30.5 acres	Vulcan Materials	Construction	Archaeological Research Services	Coriell, 1999
1999	309 acres	City of Phoenix	Sewer	Logan Simpson Design	Grafil, 2000
1999	234 acres	El Paso Natural Gas	Pipeline	Archaeological Consulting Services	Aguila, 1999
2000	259 acres/ 9.4 miles	Reliant Energy	Pipelines, Ponds	Dames and Moore	Rogge, 2000
2000	1.5 mile	Pima County Dept. of Public Works	Highway ROW	Logan Simpson Design	Coutright, 2000
2000	1.6 acre	ATC Association	Construction	SWCA	Solometo, 2000
2000	152 acres	AGRA Earth and Environment	Construction	SWCA	Mitchell and Ryden, 2000
2000	125 acres	AGRA Earth and Environment	Construction	SWCA	Mitchell and Ryden, 2000
2000	37.1 miles	Valley Telephone Cooperative	Fiber Optic Line	Lone Mountain Archaeological Services	Wondrasek and Fahrni, 2001
2001	174 acres	Maricopa Co. Flood Control District	Flood Control Channel	URS	White et al., 2001
2002	123 acres	Miller Holdings	Construction	SWCA	Lundin and Foster, 2002
2002	296 acres	Miller Holdings	Construction	SWCA	Lundin and Foster, 2002
2003	4,338 ft	Arizona Dept. of Transportation	ROW Abandonment	Archaeological Consulting Services	Aguila, 2002
2003	6.2 acres	Withey, Anderson, and Morris	Utility Line	Archaeological Research Services	Wright, 2003

TABLE 3.10-14
Segment 4 Previously Recorded Sites in and Within 1 Mile of Project Area

Site No.	Site Type/Constituents	Cultural/ Temporal Affiliation(s)	Reference
Segment 4			
AZ AA:1:91 (ASM)	Former SPRR siding	Euroamerican/ Late Historic	Crary, 1989; Bauer et al., 2000
AZ U:13:5 (ASM)	Artifact scatter: sherds (site destroyed)	Hohokam/ pre-Classic	Wasley, 1958
AZ U:13:238 (ASM)	Former SPRR siding	Euroamerican/ Late Historic	Crary, 1989
AZ T:16:101 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ pre-Classic	Quillian, 1988
AZ T:16:42 (ASM)	Artifact scatter: sherds, flaked stone	Hohokam/ unspecified	Harlan et al., 1962
AZ T:16:2 (ASM)	Artifact scatter: sherds	Hohokam/ unspecified	Ezell and Schroeder, 1939 Wasley, 1958
AZ T:16:21 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ unspecified	
AZ T:16:130 (ASM)	Linear: SR 347	Euroamerican/ Late Historic	Brown and Courtright, 2000
AZ T:16:118 (ASM)	Artifact scatter: sherds, flaked stone, ground stone, shell; possible burials	Hohokam/ unspecified	Roberts, 1992
AZ T:16:99 (ASM)	Artifact scatter: sherds, flaked stone, ground stone, shell	Hohokam/ Classic; Akimel O'Odham/ Protohistoric-Historic	Fedick, 1986 Hutira, 1987
AZ T:16:4 (ASM)	Artifact scatter: sherds, flaked stone	Hohokam/ Classic; Akimel O'Odham/ Protohistoric-Historic	Wasley, 1958
AZ T:16:3 (ASM)	Artifact scatter: sherds	Hohokam/ Classic	Wasley, 1958
AZ T:16:117 (ASM)	Artifact scatter: sherds, flaked stone, ground stone.	Hohokam/ Classic	Stone, 1991
AZ T:16:115 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ unspecified	Smithwick and Smithwick, 1987
AZ T:16:5 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ Classic; Akimel O'Odham/ Protohistoric-Historic	Wasley, 1958 Adams, 1990
GR-891	Artifact scatter: sherds, flaked stone	Hohokam/ unspecified	Morgan et al., 2000
GR-892/ AZ T:16:108 (ASM)	Artifact scatter: sherds, flaked stone, ground stone, shell	Hohokam/ pre-Classic, Classic; Akimel O'Odham/ Protohistoric-Historic	Adams, 1990 Morgan et al., 2000
AZ T:16:10 (ASM)	Maricopa Wells	Euroamerican/ Middle Historic	Urban, 1977

TABLE 3.10-14 (CONTINUED)

Segment 4 Previously Recorded Sites in and Within 1 Mile of Project Area

Site No.	Site Type/Constituents	Cultural/ Temporal Affiliation(s)	Reference
GR-893/ AZ T:16:6 (ASM)	Deflated mounds with assoc. sherds, flaked stone, ground stone, shell; burials present	Hohokam/ pre-Classic, Classic; Akimel O'Odham/ Protohistoric-Historic	Wasley, 1958 Adams, 1990 Morgan et al., 2000
GR-894/ AZ T:16:112 (ASM)	Deflated mounds and roasting pits with assoc. sherds, flaked stone, ground stone, shell; burials present	Hohokam/pre-Classic, Classic; Akimel O'Odham/ Protohistoric-Historic	Adams, 1990 Crary et al., 1992 Morgan et al., 2000
GR-895/ AZ T:16:7 (ASM)/ AZ T:16:111 (ASM)	Deflated mounds with assoc. sherds, flaked stone, ground stone, shell; burials present	Hohokam/ pre-Classic, Classic; Akimel O'Odham, Pee Posh/ Protohistoric-Historic	Wasley, 1958 Adams, 1990 Crary et al., 1992 Morgan et al., 2000
GR-896/ AZ T:16:109 (ASM)	Deflated mounds with assoc. sherds, flaked stone, ground stone, shell; burials present	Hohokam, pre-classic, Classic; Akimel O'Odham, Pee Posh/ Protohistoric-Historic	Adams, 1990 Crary et al., 1992 Morgan et al., 2000
AZ T:16:110 (ASM)	Artifact scatter: sherds, flaked stone, ground stone, shell; burials present	Hohokam/ pre-Classic, Classic; Akimel O'Odham, Pee Posh/ Protohistoric-Historic	Adams, 1990 Crary et al., 1992
AZ T:16:46 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ unspecified	Westfall, 1980
AZ T:16:30 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ unspecified	Fiero, 1969
AZ T:16:34 (ASM)	Artifact scatter: sherds, flaked stone	Hohokam/ unspecified	Wasley and Fiero, 1969
GR-1093	Artifact scatter: sherds, flaked stone	Hohokam/ unspecified	Touchin and Peterson, 2001
AZ T:12:29 (ASM)	Artifact scatter: sherds	Hohokam/ pre-Classic	Gordon, 1972
AZ T:12:27 (ASM)	Artifact scatter: sherds	Hohokam/ unspecified	Gordon, 1972
AZ T:12:26 (ASM)	Artifact scatter: sherds	Hohokam/ unspecified	Gordon, 1972
GR-1094	Rock piles, rock alignments	Hohokam/ unspecified	Touchin and Peterson, 2001
AZ T:12:31 ASM)	Artifact scatter: sherds	Hohokam/ Classic	Gordon, 1972
AZ T:12:28 (ASM)	Artifact scatter: sherds	Hohokam/ Classic	Gordon, 1972
AZ T:12:30 (ASM)	Artifact scatter: sherds	Hohokam/ pre-Classic; Akimel O'Odham/ Protohistoric-Historic	Gordon, 1972
AZ T:12:25 (ASM)	Artifact scatter: sherds, flaked stone, ground stone	Hohokam/ pre-Classic, Classic; Akimel O'Odham/ Protohistoric, Historic	Gordon, 1972

TABLE 3.10-14 (CONTINUED)

Segment 4 Previously Recorded Sites in and Within 1 Mile of Project Area

Site No.	Site Type/Constituents	Cultural/ Temporal Affiliation(s)	Reference
AZ T:12:24 (ASM)	Mound with assoc. sherds, flaked stone, ground stone	Hohokam/ unspecified	Gordon, 1972
AZ T:12:15 (ASM)	Compound walls	Unknown	Midvale, 1963
AZ T:12:19 (ASM)	Rock Pile	Hohokam/ unspecified	Gordon, 1972
GR-1008	Rock Piles	Hohokam/ unspecified	Vincent and Randolph, 1995
AZ T:12:14 (ASM)	Artifact scatter: sherds	Hohokam/ pre-Classic, Classic	Gordon, 1972
AZ T:12:23 (ASM)	Artifact scatter: sherds, historic refuse	Akimel O'Odham/ Middle-Late Historic	Gordon, 1972
AZ T:12:22 (ASM)	Artifact scatter: sherds	Hohokam/ unspecified; Akimel O'odham/ Middle-Late Historic	Gordon, 1972
AZ T:12:16 (ASM)	Rock piles	Hohokam/ unspecified	Gordon, 1972
AZ T:12:17 (ASM)	Artifact scatter: sherds	Hohokam/ unspecified	Gordon, 1972
AZ T:12:21 (ASM)	Rock piles	Hohokam/ unspecified	Gordon, 1972
GR-1003	Rock piles	Hohokam/ unspecified	Ensor and Rubenstein, 1995
AZ T:12:18 (ASM)	Artifact scatter: sherds	Hohokam/ pre-Classic, Classic	Gordon, 1972
AZ T:12:12 (ASM)	Petroglyph	Hohokam/ unspecified	Gordon, 1972
AZ T:12:20 (ASM)	Roasting pit and rock piles	Hohokam/ unspecified	Gordon, 1972
GR-1002	Rock piles	Hohokam/ unspecified	Ensor and Rubenstein, 1995
AZ T:12:13 (ASM)	Rock piles with assoc. sherds	Hohokam/ unspecified	Gordon, 1972
GR-1082/ AZ T:12:80 (ASM)	Pumping station	Akimel O'Odham/ Late Historic	Crary et al., 1992
GR-1083/ AZ T:12:79 (ASM)	Rock piles	Hohokam/ unspecified	Crary et al., 1992
AZ T:12:64 (ASM)	Artifact scatter: sherds (collected)	Hohokam/ unspecified	Adams, 1990
AZ T:12:112 (ASM)	Mound and clearing	Akimel O'Odham/ Middle-Late Historic	Webb et al., 1998
AZ T:12:142 (ASM)	Canal	Hohokam/ unspecified	Hart, 2000
AZ T:12:143 (ASM)	Canal	Hohokam/ unspecified	Hart, 2000

Table 3.10-15 presents NRHP eligibility and treatment recommendation for both previously recorded and currently recorded sites in Segment 4 that may be impacted by the proposed action. Twenty-three of these sites were recommended as NRHP eligible. A monitor will be provided for all ground disturbing activities near and within the boundaries of sites determined eligible for the NRHP and for other areas determined to have a high potential for buried cultural deposits.

TABLE 3.10-15

Segment 4 Archaeological Sites in Arizona: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/Temporal Affiliation	Approx. Size	Preliminary Assessment	Avoidance	Comments	Treatment
AZ AA:1:147 (ASM)	Pinal County	Linear	Euroamerican/ Late Historic	25 ft (width)	Not eligible	No	Regularly maintained county road	Avoid
AZ U:13:5 (ASM)	Private	Artifact scatter	Hohokam/ pre-Classic	40 x 15 m	Not eligible	No	Site destroyed	No treatment
AZ U:13:238 (ASM)	UPRR	Features with associated artifacts	Euroamerican/ Late Historic	80 x 80 ft	Not eligible	No	Former SPRR siding; site destroyed	No treatment
AZ T:16:154 (ASM)	UPRR	Artifact scatter	Hohokam/ pre-Classic	620 x 50 m	Eligible under D	Yes	Low- to-medium-density scatter of sherds, flaked and ground stone, shell; most of scatter in fill of RR embankment outside of ROW, but fill taken from ROW; subsurface remains possible in ROW	Fence & avoid
AZ T:16:2 (ASM)	Private	Artifact scatter	Hohokam/ unspecified period	unknown	Not eligible		Site destroyed	No treatment
AZ T:16:118 (ASM)	Private	Artifact scatter	Hohokam/ unspecified period	125 x 85 m	Eligible under D	Yes	Low-density scatter of sherds, flaked and ground stone, shell; subsurface deposits likely, including burials	Avoid
AZ T:16:155 (ASM)	Private	Artifact scatter	Hohokam/ unspecified period	40 x 15 m	Eligible under D	Yes	Low-density scatter of sherds and flaked stone	Avoid
AZ T:16:4 (ASM)	ASLD	Artifact scatter	Hohokam/ Classic; Akimel O'Odham/ Protohistoric-Historic	350 x 220 m	Eligible under D	No	Low-density scatter of sherds, flaked stone; subsurface deposits possible	Phase I data recovery (and II if needed)

TABLE 3.10-15 (CONTINUED)

Segment 4 Archaeological Sites in Arizona: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/ Temporal Affiliation	Approx. Size	Preliminary Assessment	Avoidance	Comments	Treatment
GR-1430/AZ T:16:5 (ASM)	GRIC	Artifact scatter	Hohokam/ Classic; Akimel O'Odham/ Protohistoric- Historic	440 x 60 m	Eligible under D	No	Low-to-medium- density scatter of sherds, flaked and ground stone; subsurface deposits possible	Phase I data recovery
GR-891	GRIC	Artifact scatter	Hohokam/ Classic; Akimel O'Odham/ Protohistoric- Historic	350 x 60 m	Eligible under D	No	Low-density scatter of sherds, flaked stone; subsurface deposits possible	Phase I data recovery
GR-1431	GRIC	Artifact scatter	Hohokam/ pre- Classic	100 x 60 m	Eligible under D	No	Low-to-medium- density scatter of sherds, flaked stone; subsurface deposits possible	Phase I data recovery
GR-1432	GRIC	Artifact scatter	Hohokam/ pre- Classic	40 x 30 m	Eligible under D	Yes	Low-density scatter of sherds, flaked stone; subsurface deposits unlikely	Phase I data recovery
GR-1433	GRIC	Artifact scatter	Hohokam/ pre- Classic	40 x 15 m	Eligible under D	No	Low-density scatter of sherds, flaked stone; subsurface deposits unlikely	Phase I data recovery
GR-1434	GRIC	Artifact scatter	Hohokam/ pre- Classic	45 x 20 m	Eligible under D	Possibly	Low-density scatter of sherds, flaked stone; subsurface deposits unlikely	Phase I data recovery
GR-1435	GRIC	Artifact scatter	Hohokam/ unspecified period; Akimel O'Odham/ Protohistoric- Historic	40 x 15 m	Eligible under D	Yes	Low-density scatter of sherds, flaked stone; subsurface deposits possible	Fence & Avoid
GR-1436	GRIC	Artifact scatter	Hohokam/ pre- Classic	215 x 60 m	Eligible under D	No	Low-to-medium density scatter of sherds, flaked stone; subsurface deposits possible	Phase I data recovery
GR-892/ AZ T:16:108 (ASM)	GRIC	Artifact scatter	Hohokam/ pre- Classic, Classic; Akimel O'Odham/ Protohistoric- Historic	800 x 60 m	Eligible under D	No	Low-to-medium- density scatter of sherds, flaked and ground stone, shell; subsurface deposits possible	Phase I data recovery

TABLE 3.10-15

Segment 4 Archaeological Sites in Arizona: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/Temporal Affiliation	Approx. Size	Preliminary Assessment	Avoidance	Comments	Treatment
GR-1438	GRIC	Artifact scatter	Hohokam/ Classic	120 x 35 m	Eligible under D	No	Low-density scatter of sherds, flaked stone; subsurface deposits possible	Phase I data recovery
GR-1437	GRIC	Linear	Akimel O'Odham, Euroamerican/ Middle Historic	10 ft (width)	Eligible under A, D	Yes	Documented as Sacaton-Maricopa Wells Road in 1876	Mitigative Documentation
GR-893/ AZ T:16:6 (ASM)	GRIC	Features with associated artifacts	Hohokam/ pre-Classic, Classic; Akimel O'Odham/ Protohistoric-Historic	750 x 60 m	Eligible under D	No	Deflated mounds with low-to-high-density scatter of sherds, flaked and ground stone, shell; burials present	Phase I and II data recovery
GR-894/ AZ T:16:112 (ASM)	GRIC	Features with associated artifacts	Hohokam/ pre-Classic, Classic; Akimel O'Odham/ Protohistoric-Historic	1030 x 60 m	Eligible under D	No	Deflated mound with low-to-high-density scatter of sherds, flaked and ground stone, shell; burials present	Phase I and II data recovery
GR-894/ GR-895/ AZ T:16:7 (ASM)	GRIC	Features with associated artifacts	Hohokam/ pre-Classic, Classic; Akimel O'Odham, Pee Posh/ Protohistoric-Historic	2960 x 60 m	Eligible under D	No	Deflated mound with low-to-high-density scatter of sherds, flaked and ground stone, shell; burials present	Phase I and II data recovery
GR-1439	GRIC	Linear	Akimel O'Odham/ Late Historic	30 ft (width)	Eligible under A	Yes	Santa Cruz Ditch	Mitigative Documentation
GR-1440	GRIC	Linear	Akimel O'Odham/ Late Historic	30 ft (width)	Eligible under A	Yes	Hoover Ditch	Mitigative Documentation
GR-1441/AZ T:16:110 (ASM)	GRIC	Artifact scatter	Hohokam/ pre-Classic, Classic; Akimel O'Odham, Pee Posh/ Protohistoric-Historic	150 x 60 m	Eligible under D	No	Low-to-medium-density scatter of sherds, flaked and ground stone, shell; burials present	Phase I and II data recovery

TABLE 3.10-15 (CONTINUED)

Segment 4 Archaeological Sites in Arizona: NRHP Eligibility and Treatment Recommendations

Site Number	Land Status	Site Type	Cultural/Temporal Affiliation	Approx. Size	Preliminary Assessment	Avoidance	Comments	Treatment
GR-1442	GRIC	Artifact scatter	Hohokam/ pre-Classic, Classic	160 x 45 m	Eligible under D	No	Low-density scatter of sherds, flaked and ground stone, subsurface deposits possible	Phase I data recovery
GR-1443/AZ T:12:16 (ASM)	GRIC	Features with no associated artifacts	Hohokam?	120 x 75 m	Eligible under D	Yes	Rock piles	Avoid
GR-1444	GRIC	Linear	Akimel O'Odham, Pee Posh/ Late Historic	20 ft (width)	Eligible under A	Yes	Diversion dike	Mitigative Documentation
GR-1082/AZ T:12:80 (ASM)	GRIC	Features with no associated artifacts	Akimel O'Odham, Pee Posh/ Late Historic	250 x 100 ft	Eligible under A	Yes	Remains of pump station and related features	Avoid
GR-1083/AZ T:12:79 (ASM)	GRIC	Features with no associated artifacts	Hohokam?	30 x 10 m	Eligible under D	No	Rock piles	Phase I data recovery

3.10.6 Ancillary Facilities

All facilities are included in the affected environment section for each segment.

3.10.7 Environmental Consequences

3.10.7.1 Proposed Action

The cultural resource survey recorded 116 sites. Eighty sites are recommended eligible to the NRHP. Tables 3-3, 3-6, 3-9, 3-12 and 3-15 provide avoidance options for each segment location. Of the 80 eligible sites, there are 4 sites in Segment 1, 33 sites in Segment 2, 17 sites in Segment 3 and 26 sites in Segment 4. Most of these sites consist of artifact scatter with features. The cultural affiliation most encountered in eligible sites is within the Archaic, Mogollon and Hohokam. When avoidance is not possible, data recovery in accordance with the approved treatment plan is recommended for each eligible site. Data recovery would be limited to the portion of the site within the ROW. Section 106 consultation is ongoing and would be completed before issuance of the Notice to Proceed and ROW grant.

A bridge that was recorded (Bridge No. 1705) is a steel stringer bridge built in 1930. The bridge is on NM 549 and crosses over the proposed ROW. It is one of the oldest railroad bridges in New Mexico and is an example of a railroad grade separation (Van Citters, 2003).

It is recommended eligible to the NRHP under Criteria A and C. No treatment is recommended since the pipeline goes under the bridge. Isolated occurrences have been fully recorded and no further work is recommended.

Of the projects listed in this cultural survey, several were surveys of the existing KMEP pipeline. The pipeline route was first surveyed in 1955, prior to line's original construction by the Southern Pacific; the portion of the route within which Segments 2, 3, and 4 are located was surveyed by McConville and Holzkamper (1955). They recorded no sites in Segment 2, but several in Segments 3 and 4. In the early 1990s, when the pipeline was operated by Santa Fe Pacific, Archaeological Consulting Services (ACS) surveyed portions of Segments 3 and 4, recording a number of prehistoric and historic sites (Crary, 1993; Crary and Macnider, 1992a; 1992b); ACS had previously surveyed the route of the Liberty to Coolidge transmission line that parallels a portion of the pipeline on the GRIC (Effland, 1984). Recent linear surveys that paralleled substantial portions of the present survey corridor were fiber optic surveys by SWCA along the El Paso Natural Gas (EPNG) pipeline that runs just south of the KMEP pipeline in Segment 2 (Tucker, 2000) and by Western Cultural Resource Management (WCRM) along the UPRR in the area of Segment 3 (Baker and Webb, 2001). In Segment 4, on GRIC land, the ASM Cultural Resource Management Division (CRMD) recently surveyed a power line, now abandoned, that was a component of the San Carlos Irrigation Project (SCIP); the line runs from 50 to 100 feet east of the existing KMEP pipeline south of the Gila; the 100-meter survey corridor for this project partially overlapped William Self and Associates' (WSAs') 60-meter corridor.

Other than linear projects, survey in the San Simon Valley in the area of Segment 2 has been limited; research-specific surveys have been conducted in the valley to the north (Gilman, 1997) and in the San Bernardino Valley to the south (Douglas, 1987). In the area of Segment 3, major surveys were done in the 1980s in association with the Central Arizona Project (CAP). The ASM Cultural Resource Management Division surveyed much of the northern Tucson Basin (Madsen et al., 1993) and from there north around the Picacho Mountains (Czaplicki, 1984; McCarthy, 1982); Northland Research surveyed through the Santa Cruz Flats for the Santa Rosa Canal (Marmaduke, 1993). The largest CAP-related surveys in the area of Segment 4 south of the GRIC was the Ak-Chin West Side Farms Project (Marmaduke et al., 1983). On GRIC lands, the P-MIP has resulted in large-scale surveys of the eastern portions of the community, but coverage of District 6 has been limited. The only large-scale reconnaissance of this area was the GRIC Archaeological and Historical Site Survey conducted by ASM in 1970-1972 (Ayres, 1975; Wood, 1972).

In terms of survey expectations, Segment 2 was known to have been, both prehistorically and historically, a sparsely populated, relatively peripheral area, as it is today. Although no Archaic sites have been recorded in the vicinity of Segment 2, their presence was considered a possibility; the type site for the Chiricahua phase is on Cave Creek, on the east side of the Chiricahuas (Sayles and Antevs, 1941). The distributional pattern of the few previously recorded prehistoric sites in the immediate vicinity of Segment 2 suggested that San Simon branch sites could be expected in the areas of mesquite coppice dunes by the river and that limited-activity sites might be present on the bajadas. Euro-American isolated refuse deposits, dating from the 1920s and later, also were expected.

In Segment 3, identification of Archaic sites was considered unlikely, because of the depth of deposition in the survey corridor. CAP-related surveys and other investigations had

already documented the presence of Hohokam resource procurement/processing sites and at least four habitation sites in and near the survey corridor; one of these also was recorded as having an O'Odham component, as well. Euro-American railroad-related sites and isolated refuse deposits, dating from the 1880s and later, also were known to be present. This general pattern applied to Segment 4, with the significant addition of known large habitation sites on the Gila having Hohokam, Akimel O'Odham, and possibly Pee Posh components.

One concern in all three segments was the possible presence of remains related to the route across Arizona used by the San Antonio and San Diego Mail Line and the Overland Mail from 1857 to 1861 and by the post-Civil War stage and freight lines until the arrival of the railroad. The Overland Mail route crossed the Peloncillos north of Segment 2 and ran to San Simon Station, thence west-southwest across the valley to Apache Pass Station (Conkling and Conkling, 1947). A later route also is shown as "Overland Route" on the GLO plats surveyed in 1883; this route crossed the Peloncillos farther to the south, apparently through the same pass as the El Paso Natural Gas Company (EPNG) and KMEP lines. No trace of this was found during the survey.

Approaching Fort Bowie and Apache Pass, all routes converged (Ahern, 1973; Greene, 1980). During a survey of the EPNG pipeline in this area, a possible portion of one these routes was recorded as AZ CC:15:64; the portion was described as a very eroded trace measuring 6 by 500 feet (Jensen and Gage, 1994). During the present survey, WSA archaeologists looked for but could not identify any trace of these routes. SWCA's 1999 fiber optic survey along the EPNG pipeline also had sought but failed to locate any sign of the routes (David Tucker personal communication, 2004). The bajada here is dissected by numerous drainages and subject to considerable erosion.

In the southern portion of Segment 3, the Overland Mail route and the later stage and freight road ran on the east side of the railroad (Conkling and Conkling, 1947). The GLO plat surveyed in 1883 shows a road labeled "Tucson" in this general location. The plats surveyed in 1883 show only fragments of a road, presumably the remains of the of the Overland Mail route. WSA archaeologists looked for but found no trace of the route in the survey corridor. As noted above in the discussion of Register-listed properties, a portion of the route (approximately 0.5 mile) has been recently identified in Picacho Pass, along with the likely site of the Picacho Station and the area where the 1862 skirmish occurred, and has been designated AZ AA:7:502 (ASM) (Strader, 2002; Strader and Strader, 2000; Strader et al., 2000). The Overland Mail route continued through the pass, thence north to Bluewater and Oneida Station, thence northwest to Sacaton, Casa Blanca, and Maricopa Wells (AZ T:16:10 [ASM]), which is located 0.5 mile west of the Segment 4 survey corridor on the GRIC. Here, WSA identified a road that could be the actual Overland Mail route; this has been designated GR-1437 and is described below.

If any subsurface cultural materials are encountered during construction, all work should stop in the vicinity until a qualified archaeologist can assess the significance of the remains. An Emergency Discovery Plan conventional with the Advisory Council on Historic Preservation and accepted by applicable agencies such as the BLM, SHPOs and tribal agencies would be followed.

3.10.7.2 No Action Alternative

Under the No Action Alternative, no ground disturbing activities would occur for the proposed project areas. The No Action Alternative would have no immediate affect on any undiscovered resources, historic or cultural, that might be present. No mitigation would be required. However, continued aging of the existing pipeline could lead to increased maintenance activities that could impact cultural resources not previously impacted. Such activities could be in emergency situations that could lead to unforeseen impacts to cultural resources.

3.11 Visual Resources

The assessment of the visual impacts is based upon the degree of change in the existing visual character from the perspective of the roads and cities along the route. Visual resources include the following landscape components:

- Land forms
- Water features
- Vegetation types
- Land use
- Cultural modifications

From the perspective of the motorist along I-10, most of the pipeline route would be in the background, especially where the pipeline is hidden from the line of sight by the berm of the railroad track. From the perspective of the people living in cities along the route, the route would conform to the visual effects created by the existing pipeline. In areas where the route deviates from the existing pipeline, minimizing the removal of trees and shrubs would help to minimize the potential visual impact.

3.11.1 Affected Environment

3.11.1.1 Segment 1

Segment 1 follows existing pipeline corridors currently occupied by multiple El Paso Natural Gas and SFPP pipelines.

3.11.1.2 Segment 2

The proposed pipeline follows existing pipelines and runs parallel to the UPRR. The proposed pipeline also parallels and is adjacent to the I-10 corridor for the majority of Segment 2 except the beginning and end of the segment.

3.11.1.3 Segment 3

This segment runs entirely along and is adjacent to the I-10 corridor and the UPRR corridor, except for a 2-mile reroute that crosses I-10 to the Toltec Station.

3.11.1.4 Segment 4

The majority of Segment 4 passes through the GRIC and crosses the Gila River. This proposed segment follows the existing pipeline across uninhibited open desert except where it crosses the Town of Maricopa and UPRR property.

3.11.1.5 Ancillary Facilities

A new breakout facility would be located in the City of El Paso on Railroad Drive. This facility would be used for storage and pumping and would include:

- Maintenance building
- Electric building
- Control building
- Electric substation
- Storage tanks
- Shipping pumps
- Retention pond

New pipeline markers would be installed along the entire route as required by 49 CFR 195.410.

Cathodic protection test stations also would be installed (bolted/welded) onto the pipeline every mile according to regulations.

3.11.2 Environmental Consequences

3.11.2.1 Proposed Action

Short-term visual impacts during construction are expected due to ground disturbance; short-term contrasts in form, line, color, and texture; and increased traffic, especially of construction vehicles.

Long-term visual impacts are not expected as a result of the proposed route since the pipeline would be installed underground within existing roadway ROWs and along the railroad ROW.

New ancillary facilities such as the cathodic protection test stations and pipeline markers would create a visual mark. However, these facilities are necessary for the protection of the pipeline and safety of the surrounding environment.

The breakout facility in El Paso is within an industrially zoned area. No visual impacts are expected since aesthetics would be maintained by using colors consistent with the surrounding landscape.

3.11.2.2 No Action Alternative

Under the No Action Alternative, no pipeline expansion would occur and no ancillary facilities such as cathodic protection test stations and pipeline markers would be installed. The No Action Alternative would not alter the landscape from the present condition and would therefore not affect the current visual quality along any of the four segments of the proposed pipeline expansion. No mitigation would be required.

3.12 Noise

This section presents the potential effects of noise from the construction and operation of the project on the surrounding area.

3.12.1 Fundamentals of Acoustics

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. There are several different ways to measure noise, depending on the source of the noise, the receiver, and the reason for the noise measurement. In this subsection, some statistical noise levels are stated in terms of decibels on the A-weighted scale (dBA). Noise levels stated in terms of dBA reflect the response of the human ear by filtering out some of the noise in the low and high frequency ranges that the ear does not detect well. The A-weighted scale is used in most ordinances and standards. The equivalent sound pressure level (L_{eq}) is defined as the average noise level, on an energy basis, for a stated period of time (for example, hourly). In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighted curve. The sound level meter also performs the calculations required to determine the L_{eq} for the measurement period.

Technical noise terms used in this report are summarized in Table 3.12-1.

TABLE 3.12-1
Definitions of Acoustical Terms

Term	Definitions
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the measured pressure to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
A-Weighted Sound Level, dB	The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
Equivalent Noise Level, L_{eq}	The energy average noise level during the measurement period.
Percentile Noise Level (L_n)	The noise level exceeded during n percent of the measurement period, where n is a number between 0 and 100 (e.g., L_{10} is the noise level exceeded 10 percent of the time).
Day-Night Noise Level (L_{dn} or DNL)	The average A-weighted noise level during a 24-hour day, obtained after the addition of 10 decibels to the noise levels from 10:00 p.m. to 7:00 a.m.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	Noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, or dissatisfaction
- Interference with activities such as speech, sleep, or learning
- Physiological effects such as startling and hearing loss

In most cases, environmental noise produces effects in the first two categories only. However, workers in industrial plants may experience noise effects in the last category. No completely satisfactory method exists to measure the subjective effects of noise, or to measure the corresponding reactions of annoyance and dissatisfaction. This lack of standard is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise.

Table 3.12-2 shows the relative A-weighted noise levels of common sounds measured in the environment and in industry for various sound levels.

TABLE 3.12-2
Typical Sound Levels Measured in the Environment and Industry

Noise Source At a Given Distance	A-Weighted Sound Level in Decibels	Noise Environments	Subjective Impression
	140		
Civil Defense Siren (100 ft)	130		
Jet Takeoff (200 ft)	120		Pain Threshold
	110	Rock Music Concert	
Pile Driver (50 ft)	100		Very Loud
Ambulance Siren (100 ft)			
	90	Boiler Room	
Freight Cars (50 ft)		Printing Press Plant	
Pneumatic Drill (50 ft)	80	Kitchen With Garbage Disposal Running	
Freeway (100 ft)			
	70		Moderately Loud
Vacuum Cleaner (10 ft)	60	Data Processing Center	
Department Store			
Light Traffic (100 ft)	50	Private Business Office	
Large Transformer (200 ft)			
	40		Quiet
Soft Whisper (5 ft)	30	Quiet Bedroom	
	20	Recording Studio	
	10		Hearing Threshold

3.12.2 Affected Environment

The project would be designed and constructed in a manner that ensures compliance with federal, state, county and city laws and regulations.

Although there are no federal noise limits, guidelines are available from the USEPA (1974) to assist state and local government entities in development of state and local regulations for noise. The Federal Energy Regulatory Commission (FERC) has adopted these guidelines in their *Guidance Manual for Environmental Report Preparation* (August 2002) that states that the project must demonstrate that it “will comply with applicable noise regulations” and “must not exceed a day-night sound level (L_{dn}) of 55 dBA at any pre-existing noise-sensitive area.” A L_{dn} of 55 dBA is equivalent to a continuous level of L_{eq} 49 dBA. It should be noted that the FERC manual was developed to provide guidance for natural gas projects, which have the potential to be very loud. FERC guidelines are not directly applicable to product pipelines.

Onsite noise levels are regulated, in a sense, through the OSHA. The noise exposure level of workers is regulated at 90 dBA, over an 8-hour work shift to protect hearing (29 CFR 1910.95). Onsite noise levels are anticipated to be in the 70- to 85-dBA range. Areas above 85 dBA would be posted as high noise level areas and hearing protection would be required.

The pipeline traverses through Texas, New Mexico and Arizona, none of which have regulations that limit industrial noise. What follows is a discussion of the local noise regulations that were determined applicable to this project. In the absence of local regulations, the project would be designed to comply with FERC guideline of 55 dBA L_{dn} (49 dBA L_{eq}) at existing noise-sensitive areas.

3.12.2.1 Segment 1

Segment 1 is located within the County of El Paso, Texas and Fort Bliss as shown in Figure 2.1-1. The noise regulations for El Paso are detailed in Chapter 9.40 of Title 9, Health and Safety, of the municipal code. The most restrictive limit to residential areas is 50 dBA between the hours 10:00 p.m. and 7:00 a.m. Noise sources associated with construction are exempt provided that they are not active between the hours of 8:00 p.m. and 7:00 a.m. on weekdays and Saturday or any time on Sunday or a holiday and do not exceed 65 dBA.

3.12.2.2 Segment 2

Segment 2 passes through Dona Ana, Luna, Grant, and Hidalgo Counties in New Mexico and Cochise County in Arizona as shown in Figures 2.1-2 and 2.1-3. Neither Dona Ana, Luna, nor Hidalgo County has regulations that limit noise levels. Grant County makes it unlawful to “disturb the peace” but exempts construction activities between 7:00 a.m. and 7:00 p.m. Cochise County does not have a noise ordinance but its zoning code does contain site development standards (Articles 12, 13 and 14) that apply to operational noise: “No noise or vibration (other than normal vehicular traffic) shall be permitted which is discernible on neighboring residential sites, to the unaided human senses for 3 minutes or more duration in any 1 hour of the day between the hours of 7:00 a.m. to 7:00 p.m. or of 30 seconds or more duration in any 1 hour during the hours of 7:00 p.m. and 7:00 a.m.”

3.12.2.3 Segment 3

Segment 3 passes through Pima and Pinal Counties, Arizona as shown in Figure 2.1.-3. Neither Pima nor Pinal County has a noise ordinance. The Sheriff's Department is tasked with dealing with nuisance noise in Pinal County.

3.12.2.4 Segment 4

Segment 4 passes through Pinal and Maricopa Counties, Arizona as shown in Figure 2.1-3. Neither Pinal nor Maricopa County has a noise ordinance. The Sheriff's Department is tasked with dealing with nuisance noise in both counties.

3.12.2.5 Ancillary Facilities

The Tucson Terminal is in an industrial area located near Davis-Monthan Air Force Base (DMAFB). The most restrictive noise limit in residential areas is 62 dBA between the hours of 10:00 p.m. and 7:00 a.m. (Chapter 16.31, Tucson City Municipal Code). Construction activities conducted between sunrise and 8:00 p.m. Mondays through Saturdays (except legal holidays) is exempt from regulation.

The breakout station is located in the El Paso. The applicable regulations are summarized in above for Segment 1.

The Deming pump station is located in the City of Deming, New Mexico. Title 4 Chapter 2 of the City's Municipal Code establishes comprehensive noise limits, including frequency dependent criteria (refer to Table 3.12-3). Construction noise limits of 75, 80, and 85 dBA (L_{10}) are established for residential/institutional, business/recreational and industrial uses respectively. The limit applies at 50 feet from the construction equipment or the lot line, whichever is furthest.

TABLE 3.12-3
Noise Limits for the City of Deming, New Mexico

Octave Band Center Frequency (Hz)	Residential (7 a.m. to 6 p.m.)	Residential (6 p.m. to 7 a.m.)	Commercial (7 a.m. to 6 p.m.)	Commercial (6 p.m. to 7 a.m.)	Industrial (6 p.m. to 7 a.m.)	Industrial (7 a.m. to 6 p.m.)
31.5	76	68	79	72	79	83
63	75	67	78	71	78	82
125	69	61	73	65	73	77
250	62	52	68	57	68	73
500	56	46	62	51	62	67
1000	50	40	56	45	56	61
2000	45	33	51	39	51	57
4000	40	28	47	34	47	53
8000	38	26	44	32	44	50
Single Number Equivalent (dBA)	60	50	65	55	65	70

Source: Title 4, Chapter 2, City of Deming, New Mexico Municipal Code
(<http://66.113.138.216/sterlingcodifiers/NM/Deming/index.htm>)

3.12.3 Environmental Consequences

3.12.3.1 Proposed Action

Construction Noise. Construction of the project is expected to start in the summer of 2005. The noise level would vary during the construction period, depending on the construction phase and number and location of operating construction equipment. Individual equipment noise levels typically used on similar heavy construction projects are presented in Table 3.12-4.

TABLE 3.12-4
Equipment Noise Levels on Heavy Construction Projects (dBA)

Equipment type		Range in Noise Level at 50 ft
Equipment Powered by Internal Combustion Engines	Earth Moving	Front Loaders
		72-84
		Backhoes
		72-93
		Tractors
		77-96
		Scrapers
		80-93
	Materials Handling	Graders
		80-93
		Pavers
		86-89
	Stationary	Trucks
		82-94
		Concrete Mixers
		75-88
	Impact Equipment	Concrete Pumps
		81-84
		Cranes, Movable
		75-88
	Other	Cranes, Derrick
		86-89
		Pumps
		68-72
	Impact Equipment	Generators
		71-82
		Compressors
		74-87
	Impact Equipment	Mounted Breakers (Hoerams)
		76-94
		Pneumatic Wrenches
		82-89
	Other	Jackhammers & Rock Drills
		81-98
		Impact Drivers (Peak)
		95-106
	Other	Vibrator
		69-81
	Other	Saws
		72-82

Source: Oregon Department of Transportation Noise Manual

Operational Noise. Noise sources associated with this project primarily include electrically driven pumps and valves. All pumps and valves are anticipated to comply with an 85 dBA at 3 feet specification. In general, the noise generated from this project is expected to be similar to the noise generated by the existing pipeline. There have been no noise complaints from the existing pipeline.

Segment 1 of the pipeline is located within a corridor that is currently used by multiple El Paso Natural Gas and SFPP pipelines. The El Paso pump station would be modified but

no pump upgrade would be required. Therefore, the noise level associated with this segment is anticipated to be similar to existing levels.

The breakout station has several additional noise sources including a thermal oxidizer. Noise from the breakout station is anticipated to be similar in level with that of the neighboring wastewater treatment plant and food processing facility. Noise levels from the breakout station are predicted to be less than 40 dBA at the nearest residences; 10 dBA below the levels required for residential property by the City of El Paso. Figure 3.12-1 depicts the predicted noise levels generated by the breakout station.

Segment 2 of the pipeline follows an existing pipeline and generally parallels UPRR or I-10. The Lordsburg pump station would be upgraded to 16-inch-diameter pipe but would not require additional pumps. The noise level associated with this segment and the Lordsburg pump station is anticipated to be similar to existing levels. The Deming pump station would double the number of pumps from two to four, adding two 2,500-hp pumps and one control valve. The additional pumps are anticipated to be similar in noise level to the existing pumps and to comply with the 85 dBA at 3 feet specification. The resulting noise level from the Deming pump station is therefore anticipated to increase 3 dBA – generally considered the threshold of perception outside of laboratory setting.

Segment 3 of the pipeline follows the I-10 and/or UPRR corridor. The Toltec pump station would be upgraded to 16-inch-diameter pipe but would not require additional pumps. Therefore, the noise level associated with this segment is anticipated to be similar to existing levels.

The existing pumps at the Tucson Terminal would be replaced with two 2,500-hp pumps. In addition, outbound and inbound control valves would be added. The closest residential area is approximately 1 mile away. Given the industrial uses surrounding the Tucson Terminal and DMAFB to the east, the noise level associated with the new pumps is not anticipated to increase noise levels.

Segment 4 of the pipeline follows the existing pipeline except for a reroute around the Town of Maricopa. An alternative route would continue through town parallel to the existing pipeline. Noise from the alternative is anticipated to be similar to existing levels.

3.12.3.2 No Action Alternative

Under the No Action Alternative, no pipeline expansion would occur and no pump or breakout stations would be constructed. The Phoenix/Tucson region would continue to receive a large portion of their petroleum products via tanker truck. The potential environmental impacts, including noise, associated with hauling petroleum products by tanker truck would remain.

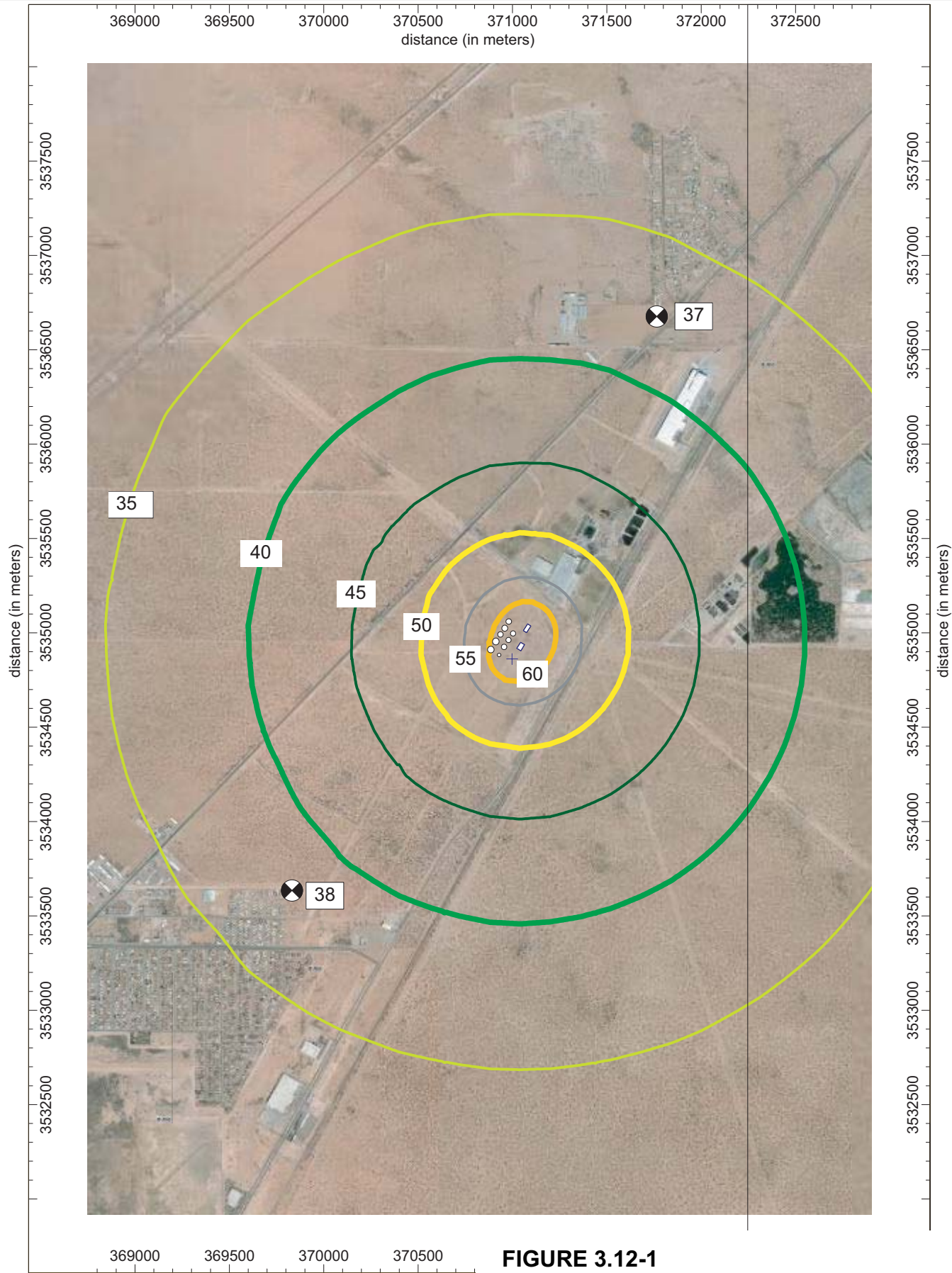


FIGURE 3.12-1
NOISE CONTOURS FROM THE PROPOSED
BREAKOUT FACILITY (dBA)
 EAST LINE EXPANSION PROJECT
 ENVIRONMENTAL ASSESSMENT

3.13 Environmental Justice

This section was prepared in compliance with Presidential Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (EO 12898), dated February 11, 1994, and Title VI of the Civil Rights Act of 1964. The purpose of this section is to determine if the proposed project would have disproportionately high and adverse human health or environmental effects on minority and/or low-income populations. This analysis focuses on the populations located within the area potentially affected by the proposed project. In accordance with EO 12898, this analysis documents minority and low-income populations within El Paso County in Texas; Dona Ana, Grant, Hidalgo, and Luna Counties in New Mexico; and Cochise, Pima, Pinal, and Maricopa Counties in Arizona. In addition, this analysis also documents minority and low-income populations within the cities/communities of El Paso, Dona Ana, Vado, Deming, Lordsburg, Marana, Eloy, and Maricopa. After establishing the existence of minority and low-income populations within the study area, this section evaluates if there are disproportionately high and adverse impacts on these populations once all of the mitigation measures for the significant impacts have been implemented. This analysis also examines where the high and adverse impacts (as reported in the various environmental analysis sections of this EA) fall relative to these populations.

EO 12898, issued by President Clinton in 1994, requires that “each federal agency shall make achieving environmental justice (EJ) part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations...”. In his memorandum transmitting EO 12898 to federal agencies, President Clinton further specified that, “each federal agency shall analyze the environmental effects, including human health, economic and social effects, of federal actions, including effects on minority communities and low-income communities, when such analysis is required by the National Environmental Policy Act of 1969.” Guidance on how to implement EO 12898 and conduct an EJ analysis has been issued by the President’s Council on Environmental Quality (CEQ) (CEQ, 1997).

Title VI of the Civil Rights Act of 1964 states that “No person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.” Title VI bars intentional discrimination, but also unjustified disparate impact discrimination resulting from policies and practices that are neutral on their face (i.e., there is no evidence of intentional discrimination) but have the effect of discrimination on protected groups.

3.13.1 Affected Environment

Both EO 12898 and Title VI address persons belonging to the following target populations:

- Minority – all people of the following origins: Black, Asian, American Indian and Alaskan Native, Native Hawaiian or Other Pacific Islander, and Hispanic

- Low income – persons whose household income is at or below the U.S. Department of Health and Human Services poverty guidelines.

The U.S. Census Bureau provided a definition of minority and low-income populations. The term “minority population” includes persons who identify themselves as African American, Asian or Pacific Islander, American Indian or Alaskan Native, or Hispanic. Race refers to census respondents’ self-identification of racial background. Hispanic origin refers to ethnicity and language, not race, and may include persons whose heritage is Puerto Rican, Cuban, Mexican, or Central or South American. Low-income populations were identified as populations that are below the poverty line (as established by the U.S. Department of Health and Human Services poverty guidelines). The U.S. Census Bureau does not provide a specific definition for “low income.” Rather, the term is used interchangeably with “poverty” (USEPA, 2000). For this analysis, low-income populations were identified using the Census Bureau’s ratio of income in 1999 to poverty level. Individuals whose income to poverty ratios are below 1 are considered low income.

The proportion of low income, minority, and Hispanic populations was calculated for each of the counties and cities/communities to determine whether the project would cause a “disproportionately high and adverse” impact to either minority or low-income populations. The following sections present data on minority, Hispanic, and low-income populations by segment.

3.13.1.1 Segment 1

The majority of Segment 1 is located in El Paso County, within the Fort Bliss Military Reservation adjacent to the City of El Paso, Texas. As the numbers in Table 3.13-1 show, the population of the City of El Paso is predominantly Hispanic (76.7 percent of the total population). However, most of the Hispanic population in the city also is white (74.1 percent of the total population). About 22 percent of the population in the City of El Paso is low income (Table 3.13-2). The proposed project ROW is not located near any residential or public use area.

TABLE 3.13-1
Segment 1, Racial and Ethnic Distribution of Population, 2000 Census

Area	Population	White	Black	Amer. Indian	Asian	Hawaiian	Other ^a	Hispanic ^b
El Paso County	679,622	74.1%	3.0%	0.7%	1.0%	0.1%	21.0%	78.3%
El Paso City	564,280	73.5%	3.1%	0.7%	1.2%	0.1%	21.4%	76.7%
Rest of County	115,342	76.9%	2.8%	0.6%	0.3%	0.0%	19.3%	86.2%
State of Texas	5,130,632	75.5%	3.0%	4.9%	1.8%	0.1%	14.7%	25.2%

^a Other includes the “Two or more races” category.

^b Hispanic origin refers to ethnicity and language, not race, and may include persons whose heritage is Puerto Rican, Cuban, Mexican, or Central or South American.

Source: U.S. Department of Commerce (DOC), 2004.

TABLE 3.13-2
Segment 1, Distribution of Low-Income Population, 2000 Census

Area	Population for Whom Poverty Is Determined	Low-Income Population	Percent Low-Income Population
El Paso County	666,676	158,722	23.8%
El Paso City	558,932	124,281	22.2%
Rest of County	107,744	34,441	32.0%
State of Texas	20,287,300	3,117,609	15.4%

Source: USDOC, 2004.

3.13.1.2 Segment 2

Segment 2 would pass through the New Mexico Counties of Dona Ana, Luna, Grant, and Hidalgo, and a portion of Cochise County, Arizona. In New Mexico, the cities of Deming and Lordsburg, and the communities of Dona Ana and Vado are the only populous areas near the proposed ROW. With the exception of the community of Dona Ana, all of the communities and counties in this segment have a white population that comprises more than 51 percent. In the community of Dona Ana, the population breakdown is Other (52.1 percent), White (45.9 percent), and Black (1.9 percent). As Table 3.13-3 shows, this segment is characterized by high Hispanic populations – only Grant County (NM) and Cochise County (AZ) have less than 50 percent Hispanic population. Both of these counties are predominately white – Grant County is 75.7 percent White and Cochise County is 76.5 percent White. The table also shows the racial/ethnic distribution for the states of New Mexico and Arizona.

As shown in Table 3.13-4, the low-income populations within this segment range from a high of 34 percent (in the community of Vado, NM) to a low of 17.7 percent (in Cochise County, AZ). For comparison purposes, the table also shows the distribution of low-income population in the states of New Mexico and Arizona.

TABLE 3.13-3
Segment 2, Racial and Ethnic Distribution of Population, 2000 Census

Area	Population	White	Black	Amer. Indian	Asian	Hawaiian	Other ^a	Hispanic ^b
Dona Ana County, NM	174,682	67.9%	1.4%	1.4%	0.8%	0.1%	28.4%	63.4%
Dona Ana CDP ^c	1,500	45.9%	1.9%	0.0%	0.0%	0.0%	52.1%	85.1%
Vado CDP ³	3,065	51.2%	1.3%	1.0%	0.0%	0.0%	46.4%	97.7%
Rest of County	170,117	68.4%	1.4%	1.5%	0.8%	0.1%	27.9%	62.6%
Luna County, NM	25,016	74.4%	0.7%	1.4%	0.3%	0.0%	23.2%	57.9%
Deming City	14,238	68.8%	0.9%	1.8%	0.5%	0.0%	28.0%	66.1%
Rest of County	10,778	81.9%	0.4%	0.9%	0.1%	0.0%	16.8%	47.0%
Grant County, NM	31,002	75.7%	0.6%	1.2%	0.3%	0.1%	22.1%	48.9%
Hidalgo County, NM	5,932	84.6%	0.2%	0.6%	0.1%	0.0%	14.5%	56.3%
Lordsburg City	3,381	81.9%	0.3%	0.4%	0.1%	0.0%	17.4%	75.1%
Rest of County	2,551	88.1%	0.2%	0.9%	0.1%	0.0%	10.7%	31.3%
Cochise County, AZ	117,755	76.5%	4.3%	1.3%	1.7%	0.2%	15.9%	30.7%
State of New Mexico	1,819,046	66.8%	1.8%	9.5%	1.0%	0.1%	20.8%	42.1%
State of Arizona	20,851,820	71.0%	11.4%	0.5%	2.7%	0.1%	14.3%	32.0%

^a Other includes the "Two or more races" category.

^b Hispanic origin refers to ethnicity and language, not race, and may include persons whose heritage is Puerto Rican, Cuban, Mexican, or Central or South American.

^c CDP = Census Designated Place

Source: USDOC, 2004.

TABLE 3.13-4
Segment 2, Distribution of Low-Income Population, 2000 Census

Area	Population for Whom Poverty Is Determined	Low-Income Population	Percent Low-Income Population
Dona Ana County, NM	169,559	43,054	25.4%
Dona Ana CDP ^a , NM	1,500	342	22.8%
Vado CDP ^a , NM	3,065	1,041	34.0%
Rest of County	164,994	41,671	25.3%
Luna County, NM	24,741	8,129	32.9%
Deming City, NM	13,970	4,600	32.9%
Rest of County	10,771	3,529	32.8%
Grant County, NM	30,365	5,676	18.7%
Hidalgo County, NM	5,838	1,591	27.3%
Lordsburg City, NM	3,287	1,074	32.7%
Rest of County	2,551	517	20.3%
Cochise County, AZ	111,867	19,772	17.7%
State of New Mexico	1,783,907	328,933	18.4%
State of Arizona	5,021,238	698,669	13.9%

^a CDP = Census Designated Place

Source: USDOC, 2004.

3.13.1.3 Segment 3

Segment 3 is located entirely in Arizona. The majority of Segment 3 is located within Pinal County, with a small portion in Pima County. The portion of Segment 3 from Picacho to Tolec is the only portion of this segment that passes through a populous area. Eloy, located between Picacho and Tolec, is the most populated area through which the pipeline passes. The Town of Marana is another populated area that is close to the pipeline route. According to the 2000 Census, the populations of both counties are predominantly White (75 percent for Pima and 71 percent for Pinal). Hispanics account for 30 percent and 29 percent, respectively, of the populations of Pinal and Pima Counties. The population in the City of Eloy is more than half White (53 percent); whereas, that in Marana is predominantly White (82 percent). Hispanics account for 74 percent and 18 percent of the populations in the City of Eloy and the Town of Marana, respectively. Table 3.13-5 shows the racial and ethnic distribution of the populations in Segment 3.

TABLE 3.13-5
Segment 3, Racial and Ethnic Distribution of Population, 2000 Census

Area	Population	White	Black	Amer. Indian	Asian	Hawaiian	Other ^a	Hispanic ^b
Pima County, AZ	843,746	75.0%	2.9%	3.3%	2.0%	0.1%	16.7%	29.4%
Marana Town	13,443	81.7%	2.7%	2.3%	2.5%	0.0%	10.8%	18.1%
Rest of County	830,303	74.9%	2.9%	3.3%	2.0%	0.1%	16.8%	29.6%
Pinal County, AZ	179,727	70.5%	2.7%	7.4%	0.6%	0.1%	18.7%	29.9%
Eloy City	10,307	52.7%	5.9%	3.3%	0.9%	0.1%	37.1%	73.8%
Rest of County	169,420	71.6%	2.5%	7.6%	0.5%	0.1%	17.6%	27.3%
State of Arizona	20,851,820	71.0%	11.4%	0.5%	2.7%	0.1%	14.3%	32.0%

^a Other includes the "Two or more races" category.

^b Hispanic origin refers to ethnicity and language, not race, and may include persons whose heritage is Puerto Rican, Cuban, Mexican, or Central or South American.

Source: USDOC, 2004.

About 32 percent of the population of Eloy and 17 percent of the population of Marana are low income. Table 3.13-6 shows the distribution of low-income population in Segment 3.

TABLE 3.13-6
Segment 3, Distribution of Low-Income Population, 2000 Census

Area	Population for Whom Poverty Is Determined	Low-Income Population	Percent Low-Income Population
Pima County, AZ	823,638	120,778	14.7%
Marana town	12,983	810	6.2%
Rest of County	810,655	119,968	14.8%
Pinal County, AZ	164,506	27,816	16.9%
Eloy city	8,762	2,796	31.9%
Rest of County	155,744	25,020	16.1%
State of Arizona	5,021,238	698,669	13.9%

Source: USDOC, 2004.

3.13.1.4 Segment 4

The majority of Segment 4 is located within Pinal County, Arizona with a small portion of the northern end reaching into southern Maricopa County, Arizona. The community of Maricopa contains the largest concentration of people near the proposed project area.

According to the 2000 Census, the populations of Pinal and Maricopa Counties are predominantly White (70.5 percent in Pinal and 77.3 percent in Maricopa). Whites account for about 59 percent of the population in the community of Maricopa. Hispanics represent 30 percent and 25 percent of the populations of Pinal and Maricopa Counties, respectively. The majority (78.5 percent) of the residents of the community of Maricopa is Hispanic. The area surrounding the community of Maricopa consists of the GRIC. Most of the proposed ROW passes through the GRIC land on this segment. Table 3.13-7 shows the racial and ethnic distribution of the populations along the pipeline route in Segment 4.

TABLE 3.13-7
Segment 4, Racial and Ethnic Distribution of Population, 2000 Census

Area	Population	White	Black	Amer. Indian	Asian	Hawaiian	Other ^a	Hispanic ^b
Pinal County, AZ	179,727	70.5%	2.7%	7.4%	0.6%	0.1%	18.7%	29.9%
Maricopa CDP ^c	1,080	59.4%	2.1%	4.5%	0.0%	0.0%	34.0%	78.5%
Rest of County	178,647	70.5%	2.7%	7.4%	0.6%	0.1%	18.6%	29.6%
Maricopa County, AZ	3,072,149	77.3%	3.6%	1.8%	2.2%	0.1%	15.0%	24.8%
State of Arizona	20,851,820	71.0%	11.4%	0.5%	2.7%	0.1%	14.3%	32.0%

^a Other includes the "Two or more races" category.

^b Hispanic origin refers to ethnicity and language, not race, and may include persons whose heritage is Puerto Rican, Cuban, Mexican, or Central or South American.

^c CDP = Census Designated Place

Source: USDOC, 2004.

About 17 percent and 12 percent of the population in Pinal and Maricopa Counties are low income. The proportion of low-income population within the community of Maricopa is 23 percent. Table 3.13-8 shows the distribution of low-income population in Segment 4.

TABLE 3.13-8
Segment 4, Distribution of Low-Income Population, 2000 Census

Area	Population for Whom Poverty Is Determined	Low-Income Population	Percent Low-Income Population
Pinal County, AZ	164,506	27,816	16.9%
Maricopa CDP ^a	1,048	245	23.4%
Rest of County	163,458	27,571	16.9%
Maricopa County, AZ	3,027,299	355,668	11.7%
State of Arizona	20,287,300	3,117,609	15.4%

^a CDP = Census Designated Place

Source: USDOC, 2004.

3.13.1.5 Ancillary Facilities

There would be no ancillary facilities installed near any residential areas. The breakout facility in Segment 1 would be located in an open area next to an industrial building. Any proposed scraper or pump stations would be located along the ROW well away from any populous areas.

3.13.2 Environmental Consequences

The EJ impacts were evaluated with regard to the minority, Hispanic, and low-income populations within each segment. Definitions of minority and low-income areas were established on the basis of the CEQ's *Environmental Justice Guidance Under the Environmental Policy Act* of December 10, 1997. CEQ's *Guidance* states that "minority populations should be identified where either (a) the minority population of the affected area exceeds 50 percent or (b) the population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographical analysis." The CEQ further adds that "The selection of the appropriate unit of geographical analysis may be a governing body's jurisdiction, a neighborhood, a census tract, or other similar unit that is chosen so as not to artificially dilute or inflate the affected minority population."

The CEQ guidelines do not specifically state the percentage considered meaningful in the case of low-income populations. For this study, the assumptions set forth in the CEQ guidelines for identifying and evaluating impacts on minority populations are used to identify and evaluate impacts on low-income populations.

Potential EJ impacts are assumed to occur in an area if the percentage of minority, Hispanic, and low-income populations is meaningfully greater than the percentage of minority, Hispanic, and low-income populations in the general population. For the following analysis, potential EJ impacts are assumed to occur if the percentage of minority, Hispanic, and low-income population within the counties is at least 10 percentage points greater than that of the general population in the state. Similarly, potential EJ impacts are assumed to occur if the percentage of the EJ population in the cities/communities is at least 10 percentage points greater than that of the respective counties.

3.13.2.1 Proposed Action

Segment 1. No EJ issues have been identified in direct relation to implementation of the Proposed Action within Segment 1. The proportion of minority, Hispanic, and low-income populations within both the City of El Paso and the El Paso County is less than 10 percentage points greater than those of the El Paso County and the State of Texas, respectively.

Segment 2. Segment 2 has proportions of minority, Hispanic, and low-income populations that are at least 10 percentage points greater than those observed at the county or state level. For instance, the proportion of minority population in the communities of Dona Ana (54 percent) and Vado (49 percent) is significantly higher than that for Dona Ana County (32 percent). Similarly, the proportion of Hispanics in the cities/communities of Dona Ana, Vado, Deming, and Lordsburg is larger than those of the respective counties of Dona Ana, Luna, and Hidalgo (see Table 3-13.3) while the proportion of Hispanics in the Counties of

Dona Ana, Luna, and Hidalgo is significantly larger than those in the State of New Mexico. Only Luna County has a percentage of low-income population (33 percent) that is larger than that of the state of New Mexico (18.4 percent). Thus, there is the potential for EJ issues with the implementation of the Proposed Action within Segment 2. However, the proposed project would follow existing ROWs and construction activities in populated areas would be completed quickly and cause minimal disturbances. As such, the Proposed Action would have no disproportionately high and adverse human health or environmental effects on minority, Hispanic, and/or low-income populations.

Segment 3. Segment 3 has proportions of minority, Hispanic, and low-income populations that are at least 10 percentage points greater than those observed at the county or state level. The City of Eloy has minority, Hispanic, and low-income populations that are significantly higher than those observed for Pinal County. The Town of Marana's Hispanic population is significantly higher than that in Pima County. Thus, there is the potential for EJ issues with the implementation of the Proposed Action within Segment 3. However, the proposed project would follow existing ROWs and construction activities in populated areas would be completed quickly and cause minimal disturbances. As such, the Proposed Action would have no disproportionately high and adverse human health or environmental effects on minority, Hispanic, and/or low-income populations.

Segment 4. The proportion of minority and Hispanic population in the community of Maricopa is significantly higher than that for Pinal County. Thus, there is the potential for EJ issues with the implementation of the Proposed Action within Segment 4. However, the proposed project would follow existing ROWs and construction activities in populated areas would be completed quickly and cause minimal disturbances. As such, the Proposed Action would have no disproportionately high and adverse human health or environmental effects on minority, Hispanic, and/or low-income populations.

Conclusion. Resource areas with potential for high and adverse human health or environmental impacts that have been evaluated in this study are: air quality, hydrology and water quality, and noise. Resource authors indicate that all impacts would be mitigated to below significance levels. Additionally, the proposed project would follow existing ROWs and construction activities in populated areas would be completed quickly and cause minimal disturbances. As such, the Proposed Action would have no disproportionately high and adverse human health or environmental effects on minority, Hispanic, and/or low-income populations.

3.13.2.2 No Action Alternative

Under the No Action Alternative, no pipeline expansion would occur with the proposed project areas. Health and environmental conditions in any minority, Hispanic, and/or low-income communities would remain unchanged from current conditions. The No Action Alternative would have no disproportionately high and adverse human health or environmental effects to low-income populations.

3.14 Socioeconomics

For the purposes of the EA process, socioeconomic conditions include the short-term socioeconomic effects of the project during construction. The long-term socioeconomic effects consider, at the population or community level, the following:

- The quality of life or “way of life”
- The economy, commercial opportunities, or employment
- The availability of recreational opportunities or amenities
- Home life or personal security
- Future land uses
- Impacts to minority and low-income groups

3.14.1 Short-Term Socioeconomic Impacts

Construction of the proposed project would represent a sizeable total investment in material and labor expenditures in each of the states and individual counties where pipeline segments are constructed. Preliminary estimates of costs are shown below in Tables 3.14-1 to 3.14-3.

TABLE 3.14-1
Costs Per County

Material Per County	Labor Per County	County	State
\$1,060,000	\$3,187,500	El Paso	Texas
\$17,000,000	\$18,350,000		El Paso Station and Breakout Facility
\$4,258,500	\$6,918,660	Dona Ana	New Mexico
\$8,767,500	\$14,244,300	Luna	New Mexico
\$3,022,000	\$2,298,000		Deming Booster Station
\$3,006,000	\$4,883,760	Grant	New Mexico
\$5,511,000	\$8,953,560	Hidalgo	New Mexico
\$3,507,000	\$5,697,720	Cochise	New Mexico
\$167,085	\$386,933	Pima	Arizona
\$3,228,000	\$2,618,000		Tucson Terminal
\$3,174,615	\$7,351,382	Pinal*	Arizona
\$2,675,493	\$6,195,588	Pinal*	Arizona
\$1,092,807	\$2,530,597	Maricopa	Arizona
\$1,910,000	\$1,790,000		Phoenix Terminal
\$58,380,000.00	\$85,406,000.00		

Note:

* Pinal County's costs were divided on a per-segment basis. Total material costs are \$5,850,108. Total labor costs are \$13,546,970.

TABLE 3.14-2
Costs Per State

Material	Labor	State
\$1,060,000	\$3,187,500	Texas
\$25,050,000	\$40,698,000	New Mexico
\$7,110,000	\$16,464,500	Arizona
\$33,220,000.00	\$60,350,000.00	

TABLE 3.14-3
Costs Per Segment

Segment	Material	Labor
Segment 1	\$1,060,000	\$3,187,500
Segment 2	\$25,050,000	\$40,698,000
Segment 3	\$3,341,700	\$7,738,315
Segment 4	\$3,768,300	\$8,726,185
	\$33,220,000.00	\$60,350,000.00

The project would employ specialized outside and possibly some local labor in each segment during the construction phase. This would generate additional employment and local spending during this period of time. The amount of local and outside labor used for constructing each segment is not known at this time, but specialized non-local personnel are usually employed for such projects. A sector-by-sector economic “multiplier” analysis, such as the U.S. Bureau of Economic Analysis’ Regional Input-Output Multipliers (RIMS), has not been performed at this time, but the overall impacts to employment and aggregate personal incomes in each of the states and specific counties where construction occurs would be positive and is assumed to be higher during the pipeline construction period. The typical direct-effect construction sector employment multiplier has been estimated by past studies in Arizona using RIMS and the Arizona State University Business Outlook Center to be greater than 2.5 for the State of Arizona. This means that full-time equivalent (FTE) of construction employment is estimated to generate more than 2.5 jobs throughout the economy, per the statewide multipliers for RIMS II.

The construction phase also would generate additional sales and ad valorem taxes, where applicable, income taxes in each of the states where construction occurs. These additional state and local revenues can be considered additional revenues that would not occur in the absence of this project.

Construction of the proposed project also would require purchase of a total of 233.2 miles of easements currently held by private entities, states, and the federal government at an

estimated cost of \$4.23 million. It is estimated that purchases would include 6.2 miles of easements in Segment 1; 161 miles in Segment 2; 31.2 miles in Segment 3; and 34.8 miles in Segment 4. Fair market prices are expected to be paid for easements. The overall short-term impact of the construction of the proposed project is expected to be positive due to additions to state and local area incomes, tax revenues, and temporary employment.

Since the funding to build the project comes from private industry resources that would otherwise not be spent in these local area, the employment, earnings, and other impacts are therefore truly 'new' to the local and regional economies.

3.14.2 Long-Term Socioeconomic Impacts

The purpose of the proposed pipeline is to aid the region's municipalities in securing additional petroleum sources for the rapidly growing population. **This expansion would increase pipeline capacity by approximately 53,000 barrels per day on the El Paso to Tucson segment, and by approximately 44,000 barrels per day on the Tucson to Phoenix segment.** The state of Arizona has one of the fastest population growth rates among the 50 states for the last 50 years. Most of the growth is within the metropolitan Phoenix and Tucson areas, which is known as the Phoenix-Tucson metropolitan corridor.

Approximately 80 percent of Arizona's population of 5 million people live in the Phoenix-Tucson metropolitan corridor (USGS, 2001). According to a market summary produced by Parkway Properties, Inc., the population growth in Phoenix alone has approximated 95,000 people a year since 1990.

The state uses about 7.3 million gallons (173,000 barrels) of gasoline per day. A little under 5 million gallons (110,000 barrels) are used in Maricopa County alone. For the foreseeable future, economic stability and growth depends on affordable, reliable, and safe supplies of both energy (fuel and electricity) and water. Arizona is in a delicate position due to the scarcity of water and the lack of crude oil production or gasoline refining in the state.

Availability and affordability of gasoline is crucial for all citizens, especially those on fixed incomes and those workers with incomes lower than the national average.

Depending on future gasoline demands in the markets serviced by the pipeline, an increase in gasoline supply may create a more stable, or possibly even lower, price environment for wholesale and retail purchasers of gasoline. The new pipeline also would mitigate impacts to potential, temporary supply disruptions such as the temporary supply reductions seen in Maricopa County in June 2003.

3.14.3 Other Long-Term Impacts

Employment. It is currently estimated that nine new full-time positions would be created in the El Paso area as a result of higher operating and maintenance requirements from the new pipeline. These employees would generate additional secondary spending in the local economy through purchases of housing, food, and other commodities and services in the local economy.

Quality of Life. An increased supply of gasoline to the markets served by the new pipeline may ameliorate annual, cyclical changes to gasoline prices at the wholesale and retail levels. All else equal, a higher supply of gasoline may create an environment of lower gasoline prices, although this cannot be determined or assured in advance due to the uncertainties of

future local and national gasoline market conditions. The negative feature of increased gasoline supply may be increased storage requirements and, through lower prices, higher per-capita consumption levels, both of which would require environmental monitoring and potential remediation.

Economy, Commercial Opportunities, and Employment. Since gasoline is one of the key inputs to all U.S. economies, a stable, increased supply at a potentially lower price would act as a reduction in the effective cost of business input costs. This would increase consumption by both consumers and business. To the extent that gasoline is considered more secure and potentially price competitive, business competitiveness would be enhanced. Lower input costs for business would enable a higher level of transactions, which may increase employment levels. A potentially lower price of gasoline would enable more travel to rural areas, which would clearly benefit those regions.

Availability of Recreational Opportunities. An increased supply of gasoline would not have a major impact on recreational opportunities, except that at a potentially lower price per gallon, residents would have an added incentive to travel to state recreational areas that are in rural locations.

Home Life and Personal Security. Increased regional gasoline supplies may not noticeably affect these aspects.

Future Land Uses. New land requirements for gasoline storage facilities may be required. A potentially negative impact of a higher supply (and potentially lower prices for gasoline) is that marginally lower transportation costs could promote suburban sprawl.

Impacts to Minority and Low-Income Groups. A higher supply of gasoline may provide a small benefit to these groups through potentially lower costs for transportation. Negative impacts to these groups have not been identified.

3.15 Cumulative Effects

3.15.1 Proposed Action

Implementation of the Proposed Action, along with past, present, and reasonably foreseeable actions, would have no adverse cumulative effects on the resources described in Section 3. Any effects to resources would occur during construction activities and would therefore be temporary, with the exception of cultural resources. Some unavoidable cultural resources would be permanently impacted and mitigation measures have been recommended to preserve the integrity of those resources. After pipeline installation, the ROW would be allowed to return to a natural state. No disturbances would take place as a result of operating the pipeline once it has been installed.

An exception to this would occur at the ancillary facilities such as the breakout facility. Facilities such as this would be permanent structures but would not impact the surrounding area as a result of operating each facility. The installation of ancillary facilities associated with this project would have no adverse effects on resources described in this document.

3.15.2 No Action Alternative

Under the No Action Alternative, replacement of approximately 233.2 miles of pipeline between El Paso and Phoenix would not occur nor would the installation of any associated ancillary facilities occur. SFPP's East Line would continue to operate in its current state, which would not meet the purpose and needs outlined in Section 1.2.

The SFPP East Line, in its current state, would not be able to meet the increasing demands of the Phoenix/Tucson region. The Phoenix/Tucson region is expected to experience continued rapid growth. To keep up with the increased demand in petroleum products, the use of tanker trucks to haul products would need to increase. This increase in truck traffic poses greater threats to people and the environment and would result in a less reliable supply of petroleum products.

Pipelines are distinguished as the safest and most economical method of transporting large quantities of petroleum products across great distances. Pipelines have a better safety record than other methods of transporting petroleum products, especially in relation to hauling by trucks. During the period between 1997 and 2000, truck incidents resulted in over 100 times more deaths, over 30 times more injuries, and over 45 times more fires and/or explosions than pipelines (Allegro Energy Consulting, 2003). Over the past 34 years, pipeline incidents (spills or other safety incidents) have seen a decrease of about 60 percent, despite an increase of 42 percent in the amount of petroleum product transported (Allegro Energy Consulting, 2003). The increased truck traffic, resulting from implementation of the No Action Alternative, may potentially have some serious long-term negative effects on the people and environment along the transport route due to the increased risk of accidents.

In addition to the increased risk of accidents, the increased truck traffic would result in higher levels of air pollution throughout the region. Highway vehicle emissions account for the majority of air pollution. Diesel exhaust, which is used by large transportation trucks, ranks among the air pollutants that the USEPA believes to pose the greatest health risk.

The Phoenix/Tucson region is expected to experience continued unprecedented growth, which would place added pressure on municipalities to provide adequate services. With the selection of the No Action Alternative, the current supply of petroleum products would have to satisfy the increasing demands of this growing population. Price increases of petroleum products based on demand/supply interactions would not be alleviated under the No Action Alternative.

Under the No Action Alternative, the use of tanker truckers would continue and ultimately increase to provide adequate petroleum supplies to a rapidly increasing population. Potential environmental impacts associated with hauling petroleum products by tanker trucks would increase as a result. These impacts include air pollution, possible spillage and other traffic accidents during hauling, noise pollution due to truck traffic, and wear on highways and roads caused by repetitive truck passage.

3.16 Mitigation Measures

All mitigation measures or BMPs listed in Section 2 (see Table 2-3.1) would be implemented as part of the Proposed Action to minimize any potential impacts to resources. These BMPs include practices to minimize impacts to soil and water, vegetation, wildlife, air, and the human environment. Practices also would be implemented to minimize the spread of noxious weeds within the project areas. These BMPs would be incorporated in the construction plan as a proactive way of minimizing any potential impacts to the environment as a result of this project.

Mitigation measures have been recommended for the impacts to cultural resources within the project area that cannot be avoided. Unavoidable cultural sites would undergo data recovery in the areas of potential affect prior to construction. Where feasible, cultural resources would be avoided by narrowing construction activities around the site or boring underneath the site. If any subsurface cultural materials are encountered during construction, all work should stop in the vicinity until a qualified archaeologist can assess the significance of the remains. An Emergency Discovery Plan conventional with the Advisory Council on Historic Preservation and accepted by applicable agencies such as the BLM, SHPOs and tribal agencies would be followed.

3.17 Summary of Impacts

Table 3.17-1 summarizes the determination of potential impacts to resources discussed in this EA.

TABLE 3.17-1
Summary of Impacts

Resource	Impact
Land Use	Short-term impacts during construction. No long-term impacts.
Recreation	Short-term impacts during construction. No long-term impacts.
Geology and Soils	Short-term impacts during construction. No long-term impacts.
Hydrology and Water Quality	Potential short-term impacts in the event that groundwater is encountered during excavation. No long-term impacts.
Floodplains and Waters of the United States	Would not affect the function of any waterways.
Biological Resources	
Vegetation	Direct effect to vegetation within the construction ROW but allowed to return to natural state after construction is completed.
Wildlife and Wildlife Habitats	May directly affect individuals by displacing wildlife within the ROW but would not adversely affect species as a whole.
Special Status Species	
Cactus ferruginous pygmy-owl	No direct effect to individuals but may have direct effect on potentially suitable breeding and dispersal habitat in the form of construction activities. Potential effects would only occur during construction activities.
Northern aplomado falcon	No direct effect to individuals. May have indirect effect on potential breeding and foraging habitat during construction.
Western burrowing owl	No direct effect to individuals. May have indirect effects on potential habitat or nearby burrowing owls during construction.
Jaguar	The Proposed Action would have no direct effects on individual jaguars. The Proposed Action may have an indirect effect on foraging behavior of jaguars by displacing prey species during construction.
Lesser long-nosed bat	No direct effect to individuals. May have indirect effect on foraging behavior during construction.
Cave myotis	No direct effect to individuals. May have indirect effect on foraging behavior during construction.
Mexican long-nosed bat	No direct effect to individuals. May have indirect effect on foraging behavior during construction.
Mexican long-tongued bat	No direct effect to individuals. May have indirect effect on foraging behavior during construction.
Western small-footed myotis	No direct effect to individuals. May have indirect effect on foraging behavior during construction.

TABLE 3.17-1 (CONTINUED)
Summary of Impacts

Resource	Impact
California leaf-nosed bat	No direct effect to individuals. May have indirect effect on foraging behavior during construction.
Desert tortoise	No direct effect to individuals. May have indirect effect on foraging behavior of individuals potentially roaming in the area during construction.
Texas horned lizard	No direct effect to individuals. May have indirect effect by impacting potential habitat.
Acuna cactus	No direct effects to individuals. May have indirect effect by impacting potential habitat.
Sand prickly-pear cactus	No direct effects to individuals. May have indirect effect by impacting potential habitat.
Air Quality	Impacts for each segment would be negligible and short-term. Impacts would primarily take the form of fugitive dust during construction activities.
Historic and Cultural Resources	Direct effects to unavoidable cultural resources. Impacts mitigated through data recovery.
Visual Resources	Short-term impacts during construction in the form of construction equipment. No long-term impacts.
Noise	Similar to existing noise levels after construction.
Environmental Justice	No disproportionately high or adverse effects on minority and/or low-income populations.
Socioeconomics	Positive short- and long-term impacts.